The Builder.

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Restoration of Churches in Rome.

THE restoration of the S. Lorenzo Basilica on the Tiburtine Way has been carried out by the architect Vespignani in better taste and style than many such processes to which Rome's churches have been subjected in modern times, though not, indeed, without some prejudice to olden details of interest. Absolutely Vandalic was one proceeding, that sacrificed a lateral porch with columns and mosaic decoration,—one of those beautiful monuments of the thirteenth century by the well-known Cosimati family (whose works are among the finest examples of the Mediæval Gothic in Rome), this construction having been unscrupulously destroyed in order to form a sacristy in place of the lateral entrance it had so well adorned. We cannot commend the filling of the narrow-arched windows along the southern aisle, nor the opening of another row, much wider, though of similar form, along the lower part of the same walls; nor can we see without some regret the complete repainting of the curious series of frescoes carried, in two files, along the walls of the atrium, attributed to the Romano-Greek school of the thirteenth century, and illustrating the life and martyrdom of SS. Stephen and Laurence, besides other strangely romantic legends, as the contest between Demons and Angels for the soul of the Emperor Henry II.; the phantom High Mass, seen in this church at midnight by a pious sacristan of the Benedictine community, once occupying its cloisters; and the story (in several acts) of the transfer of St. Laurence's body from Constantinople to Rome in the year 557.

The history of S. Lorenzo is singular and complicated. It appears that two churches, both beautiful and famous in ancient times, existed on this site anterior to the conspicuous buildings of Honorius III., who added the present nave and aisles, with the portico and colonnade supporting a mosaic-inlaid architrave under a heavy pent-roof. One of these churches existed in the fifth century, when it was enriched by some donations from Pope Hilary. Another is spoken of as ancient in the eighth century; for we read in Anastasius that Hadrian I. constructed the *major* basilica to which it was annexed,—the writer in the sequel explaining what he here means by *constructed*—merely the renewal of the roofing, which had been quite ruinous. The church ascribed to Pelagius, and in which the body of St. Laurence was laid, is shown by notices in ancient writers to have been a building of earlier date, renewed and amplified by that pope in the seventh century; afterwards styled *speciosior-nova*, on account of the splendour with which Pelagius invested it. That "major" basilica which was newly roofed by Hadrian, and dedicated to the Blessed Virgin, was the edifice to which pertained the great triumphal arch (now adorned with the mosaics of the seventh century), which, from having terminated the nave of the original church, became the boundary between that compartment and the presbyterium, when the whole primitive structure was converted into the choir of the much larger basilica, brought to its present development under Honorius III., about A.D. 1216. This ancient portion (two churches, in fact) is on two levels,—the lower like a crypt, with its altar before the tomb of the martyrs Stephen and Laurence; the upper, an elevated choir, paved with rich marbles, with double colonnade of antique shafts, divided by a richly-chiselled architrave, and reached by several steps from the nave of Honorius's building. In the course of time (what period is uncertain), the crypt became in the greater part filled with soil; and the tomb-chapel consequently accessible but on one side,—that where stands its altar; the magnificent antique colonnade of fluted white marble, with Corinthian capitals, some beautifully adorned with military trophies amidst the acanthus leaves,—the spoils, no doubt, from some edifice of classic antiquity,—being still preserved, like a connecting link between the upper and lower churches. Those shafts rising high around the actual choir, their basements, at much lower level, are looked down upon from the parapet-walls enclosing that sanctuary. It is the restoration of this primitive crypt to its original state, and the dismembering of the sepulchral chapel under the high altar of Pelagius's church, so as to leave it accessible on every side, that constitute the most meritorious part of the project recently carried out by the architect of Pius IX. Before entering, we notice the bronze statue of St. Laurence leaning on the instrument of his martyrdom, that now stands on a column of red granite, with lofty pedestal and basement of marble; the statue about life-size, and therefore too small for effect at its high situation. The novelty that most strikes the eye on this church's front is the clothing of the whole upper façade, above the portico-roof, with frescoes in imitation of mosaic on a gold ground (to be ultimately executed in that more enduring art) by Caponari, a young artist, the pupil of Podesti, representing the colossal figures of the Emperor Constantine, and the Popes Honorius III., Pius IX., Sixtus III., and Hadrian I., the first two holding small models of this basilica. The figure of the present pontiff is at once a recognizable and speaking likeness; above, along a heavily-projecting frieze, half-lengths of the Saviour (who is blessing with uplifted hand), Saints Stephen and Lawrence, and four other saints, male and female,—the general composition good; but in the very vivid tints of the painting thus placed on trial, rather too jarringly contrasted with the venerable and sombre aspect that distinguishes the whole exterior. The same artist is now engaged on another series of colossal figures, in fresco, over the triumphal arch, on the side towards the nave, only two of several saints yet appearing in the group begun. Another work still in progress is the colouring of the hitherto bare rafters that support the triangular roof, in a rich diaper-work, blue, red, and yellow. The round-arched windows of the choir are tinted (and, we believe, all the rest are to be so eventually) with a commonplace geometric pattern, in red, yellow, and orange, whose effect one can by no means command,—glass-painting, in fact, being an art never carried to perfection, and to this day most rare in Rome. A very rich decoration, in diaper-colouring, of a lateral chapel, for the Holy Sacrament, would be more pleasing if the chapel itself were not utterly alien in style, and apparently cut off from the more ancient constructions. Descending into the crypt below that choir, the most finely characteristic portion of the whole interior, we may enter and walk round the isolated chapel, where the two martyrs repose in an enormous sarcophagus of Phrygian veined marble, surrounded by grating; around this extending a graceful colonnade of grey marble, forming three aisles, under a low ceiling, divided into bays at the eastern side, between the altar and end walls; single files of half columns, set against pilasters, extending laterally to that tomb-chapel, the interior of which we can look into through several narrow arched windows, with gilt grating. There is a solemn simplicity, well adhered to by the restoration, in the character of this semi-subterranean compartment, and the dim light accords with its quiet but stately architecture. Beyond it the extremity of the tribune is supported from below by a transverse nave, with a small altar at each end, and three antique arched niches, in two of which are frescoes (unknown till brought to light in these works), covering the end wall and part of the sides, a series of curiously archaic character, conjectured by Di Rossi to be of the tenth century, and certainly of a period when art was well nigh at its total eclipse. In one niche we see a Madonna veiled in attitude of prayer, with outspread arms, between two saints; two other saints, male and female, on the lateral walls. Another Madonna all covered with jewelry, and the child on her lap; a saint, male and female, on each side of her, and four others, male and female, on each lateral wall, the latter figure of the Virgin, with distinct characteristics of the declining Byzantine school, the former still more rude in style and devoid of expression; in this last instance alone the subject being distinguished by letters of a name, MPΘΥ. On the walls of the aisle, which is quite cut off from the rest of the church, are set four ancient epigraphs, on marble slabs, discovered in fragments during the recent works, and now restored so as to be read with easy intelligence, the most curious referring to the pontificate and relatives of that far from respectable Pope, John XII., with date 963. A finely venerable cloister, interesting for the character of its architecture, and dating from the eleventh century, has been left untouched in the restoring works, and happily preserving to this day all its severe and olden dignity. Capuchins have been placed here, after the long desertion of the convent, by Pius IX., and among the renewed celebrations at S. Lorenzo, we shall remember that we last attended here in the golden light of evening; multitudes of tapers burnt on the high altar, and in large chandeliers, pendent between the antique columns round the choir: no paltry decorations or draperies interfered with the details of architecture. A plain deep-toned chant of the "Litany of all Saints" was accompanied by subdued strains from an organ, during the exposition of the Host; and the whole service seemed in harmony with the character of the fine old edifice.

Since the discoveries made in the last winter by Mr. J. H. Parker, in the subterraneans well known to exist, but long left unexplored, below S. Pudenziana, on the Viminal Hill, new interest has attached to that venerable church, said to be the most ancient in Rome, and occupying the site of the house of the Christian senator Pudens, who entertained St. Peter as his guest, A.D. 44, and to whose sainted daughter it is dedicated. Within this house were baths (*balnea*, not *thermæ*), which, it seems, continued in use till later ages, known as the "Baths of Wonatus," from the name of one of that senator's sons; and we read in Baronius that considerable ruins of that building were erect in the sixteenth century; in the "Sacre Stazioni Romane," by Piazza, an archæologic as well as devotional work, that those remains were still conspicuous about the end of the century following. It is believed the house, or (as tradition states) the baths, were first consecrated for worship by Pope Pius I., about A.D. 145, on the prayer of

Praxedes, another daughter of Pudens, who survived till that date; that at this earliest stage of the local conditions two churches occupied this site, known as Titulus Pudentis and Titulus Pastoris, the latter dedicated to Pastor, a brother of the same Pope Pius.

These oratories (as they might be called in respect to size) were subsequently thrown together into a single sanctuary, as the church was rebuilt first by Adrian I. in the eighth century, afterwards by Gregory VII. in the eleventh, and by Innocent II. in the next; and, last of all, were effected the most injudicious restorations (or rather alterations) in a style announcing almost the worst period of Italian art by the titular Cardinal Gaetani, in 1597. In its present state, little of the ancient architecture remains except twelve columns of *bigio* marble, barbarously built up into heavy square pilasters along the nave, and two others flanking the portal; besides some quite plain mosaic pavement in one chapel and one aisle. But we recognise an early Christian period in the low reliefs on the lintel of the doorway, representing the busts of SS. Pudentiana and Praxedes, and of two others, probably SS. Pudens and Pastor; the divine Lamb, supporting a cross, in the centre, and a graceful foliate ornament along the interstices. In the square campanile of brickwork (date probably about 1130, the period of the buildings of Innocent II.) we have one of the finest specimens of its description in Rome, with three stories of triple arcades divided by marble shafts, several bands of terra-cotta cornice moulding, and, on the upper part, inlaid disks and crosses in coloured stone. Reduced as the actual church is, by tasteless modern works, to a level with the many other uninteresting sacred structures of the sixteenth century in Rome, we may still trace the original plan dividing it into two sanctuaries; the larger corresponding to the present chancel, and perhaps also to the nave; the latter represented by a lateral chapel and narrow aisle, once the *titulus Pudentis*, in which a council was held under Pope Symmachus (498—514), and whose pavement is still a field of primitive mosaic, laid simply in cubes of white and gray marble, intermixed with porphyry and serpentine, placed in irregular pieces. In the same chapel is kept the most revered relic of this church, said to be a part of the wooden altar on which St. Peter here celebrated the Eucharist; also a tablet recording the memories of the spot, as more fully given in another very curious inscription in the nave, repeated in Latin and Italian.* One artistic treasure, of high value and antiquity, is still fortunately left in its place,—the mosaic of the apse, referred by Italian writers to the year 884, by Germans (v. *Beschreibung Roms*), supposed to be that ordered by Adrian I. in the eighth century;—at all events, a work of such merit that Poussin esteemed it the first among ancient Christian mosaics; and we see that Di Rossi, in his lately published "*Roma Cristiana*," agrees as to such claims. In conception and treatment this work is truly Classic. Seated on a rich throne, with gilding and red cushions, is the central figure of the Saviour, in vestments of gold tissue, extending one hand, and in the other holding a book that displays the words, "*Conservator Ecclesiæ Pudentianæ;*" laterally, the two sainted daughters of Pudens standing with leafy crowns in their hands; and below, the half-length figures of SS. Peter and Paul, with eight other persons, all males, of different ages and in amply-flowing costumes, antique Roman in fashion: beyond this group, a portico with arcades, divided by pilasters, and a pent roof, over which, in the distance, are seen several stately buildings with arched windows, arcades, and pilasters; one of these edifices in form a great rotunda; another near it, an oblong structure, with gable front; the former we may suppose a baptistery, the latter a basilica, probably faithful transcripts of the architecture of the time, as are perhaps all the other buildings in this interesting representation. The absence of the nimbus to all the heads introduced in the sacred group, *except* the Saviour's, might confirm the conjecture hazarded by some writers who ascribe this mosaic to a date so early as the fourth century; since it is certain that till the latter years of that, or beginning of the next century, such a symbol of sanctity did not obtain its place in Christian art. Above the Saviour's figure rises a lofty cross, studded with precious stones; higher, as if hovering in air, are the four winged emblems of the Evangelists, one of which has been entirely, and another almost entirely, sacrificed, with incredible Vandalism, to some heavy modern detail in the framework overarching the whole. It is certain that restorers have had much to do with this mosaic as now presented to us; the character of the Saviour's head has a severe solemnity; those of the apostles (who have no symbols) are nobly venerable; and the whole composition reminds us of the style distinguishing classic reliefs. Leaving the church, we observe (in a court on one side) the masonry of a primitive period, — perhaps that of the second century of our era, recognisable in a lateral wall of Roman brickwork, like that of the best ancient period, pierced by high arched windows (now built up), and supported by several constructive arches; elsewhere the additions of the fourth century, indicated in the square stone blocks set at intervals into the brickwork, a method practised under Constantine. Near one angle of these walls, we may enter through a gap rudely broken open, to descend into the subterraneans, now in total darkness, and in great part filled up with soil, over different levels of which we must pursue an uneasy path; first, through a long interior under a stucco-covered vault, probably the nave of the primitive church; thence into some vaulted chambers with walls and roof alike stuccoed, in some parts painted in plain red bands that follow the lines of archways; elsewhere adorned in more decorative style with architectural subjects, reminding us of the Pompeian.

In one chamber is a fireplace with aperture filled by a wall, over which is a similar coating of stucco; and in another place we see a pavement in black and white mosaic, without any design, laid bare to but slight extent by the removal of the encumbering soil. It seems probable that these latter interiors belong to the baths, contiguous to which, but not so as to necessitate the sacrifice of their buildings, was formed that church within the senator's mansion. And these interiors, long left to oblivion, we know were once profaned for evil purposes; as it is on record how, in the time of Raffaelle, they were ordered to be filled up with soil, as recently found, because become a haunt of brigands! Mr. Parker, who well explained the conditions and went over the story of this church at a meeting of the English Archæologic Society, has applied for permission to have the whole of its subterraneans cleared out at his own expense, but, we are sorry to say, without success hitherto; and we see, in the destinies of this interesting edifice (the supposed primitive cathedral of the Papal metropolis), a striking example of the negligence, amidst much costly and ostentatious church restoration, to be charged against Rome's authorities in respect to the less conspicuous, however venerable, monuments of Christian antiquity.

The Minister of Public Works has issued a Report, addressed to the Pope, on the exports from these States for the Dublin Exhibition, this document containing a full catalogue of objects sent, in whose columns appear,—100 sculptures (statues, busts, reliefs); 41 pictures on canvass; 182 engravings from the Camareel *Calcografia;* 10 coloured plates from the chromo-lithographic establishment in Rome; 25 medals struck under different pontiffs since the reign of Pius VII.; a large number of cameos on shells and *pietra dura;* objects in wrought marble, ivory, and wood; photographs, machinery; and, among natural history classifications, 110 specimens of the mineralogy of these provinces. Cardinal Antonelli exhibits a precious cameo, by Lanzi, of St. George on Horseback; Cardinal Altieri, a geologic map of the mountains of Tolfa, executed by Pouzi, professor of geology at the Roman University. The ministers flatter themselves that the hall in the Dublin buildings appropriated to the produce of these States, will deserve the name of "Pearl of the Exhibition." All the objects were embarked at Civita Vecchia, at the expense and risk of the Irish deputation, in the steamer sent by the directors at their own cost; and the nomination of Lord Talbot de Malahide as Pontific Commissary for the Exhibition has proved generally acceptable. We need not further enter into a report the subject-matter of which now pertains to the sphere of British, rather than Roman, intelligence.

A set of antique Christian glasses, adorned with sacred representations, figures of apostles, symbols, &c., in gold enamel, has been purchased here for the English Government, through the agency of a gentleman authorized first to offer 160*l.*, finally 220*l.*, for the whole, consisting of thirteen specimens, some in a fragmentary state. They found their way to Rome from Sicily, after the dispersion of the Recupero Museum; and are, we believe, the only such collection extant, except one of greater value in the Vatican Library.

* "In this church, more ancient than any other in Rome, formerly the house of Pudens, a senator, father of SS. Novatus, Timotheus, and the virgin saints Pudentiana and Praxedes, was the first residence of the holy Apostles Peter and Paul. Here those who became Christians used to assemble to attend mass and receive the holy communion: here are buried the bodies of 3,000 martyrs, and an immense quantity of martyrs' blood is collected. Those who visit this church every day obtain an indulgence of 3,000 years, with remission of the third part of their sins." Cardinal Wiseman, good authority as to a church from which he took his title in the Sacred College, assumes (*Fabiola*. ch. x.) that S. Pudenziana was the principal place of Christian worship in Rome from the apostolic age; and that Pius I. only added another oratory, but did not *first* consecrate for religious uses the house of that senator, who is the identical Pudens mentioned by St. Paul in his Second Epistle to Timothy, and said to have suffered a martyr's death under Nero. His two daughters are represented, in the reliefs over the portal, with large vases in their hands, allusive to their care in collecting the blood of such witnesses to faith.

NEW AND IMPROVED SCIENTIFIC INSTRUMENTS AND APPLIANCES.

THE armoury of science is enriched with new weapons only at long intervals. But so much application, so many experiments, and such a high degree of skill and scientific learning are required for the perfecting of every step in the invention of instruments, that we cannot be surprised that they are of rare occurrence. The improvers of existing instruments, as well as the inventors of new ones, ought to be accounted as the greatest benefactors of science: yet this is scarcely the case. The inventor gives the most indicative name he can coin to express the nature and object of his invention, and his own is scarcely heard. The Daguerreotypic apparatus was an exception to this rule; but to what extent is the photograph, telegraph, or stereoscope associated in the mind of the general public, with their inventors? With this slight indication of our sense of the recognition due to the men who, in the closet or the laboratory, quietly pursue ideas and carry on experiments, the result of which is to put into the hands of man instruments that set free facts that have hitherto been hidden, or disclose powers of which we were hereunto in ignorance, or adapt forces that have hitherto been wasted, we proceed to the mention of some recent inventions and a few improvements. Some of these may yet require subtraction of cumbrous details, or elaboration, or, perhaps, additions of exquisite simplicity before they can be put to remunerative use,—just as the magnesian light would seem to require some happy suggestion which, being adopted, would render it steady and continuous; for it often happens that men stand on the very brink of success for years before they, by some master-stroke, attain it. Thus, by the simple adjustment of a diagonal sun-glass to an equatorial by Mr. Cook, Professor Phillips has been able to see certain bodies on the sun, which may be either mountains or clouds: some equally simple and happy addition to that contrivance may so assist the vision that we shall learn as much, and perhaps more, of that glorious orb than we know of the moon.

The balloon ascents of Mr. Glaisher would be of very different value if there were no such things as scientific instruments. It is, principally, the delicacy and perfection of the instrument he takes with him into the "firmament on high" that make his observations so exceedingly desirable. This intrepid *savant* has expressed his approval of a new anemometer by Mr. C. Cator. The instrument hitherto used for ascertaining the pressure and velocity of wind was made by Mr. Osler. In Mr. Cator's anemometer the pressure of the wind is measured by two curved levers of equal length acting against each other, their motion being in a vertical plane. Mr. Osler had used springs—a light spring for a light air, and a strong spring for a gale. The pressure-plate, or surface upon which the wind acts, shows the greatest departure from previous forms. This is the base of a cone, the axis of which is horizontal and attached to a bar, by which it is moved backwards and forwards on friction-rollers. This much of the instrument must be out of doors; but a chain attached to the horizontal bar passes down a tube, and is connected with the rest of it within any building fixed upon. At one end of the upper of the two curved levers mentioned there is a fixed weight, and to the opposite end of the under one

is attached the end of the connecting-chain. When there is a calm, the point of contact is at the fixed weight. When the wind blows against the pressure-plate outside, it causes the chain to lift up these levers, and then the point of contact moves to the other end; and as the pressure subsides, the levers readjust themselves. Attached to the under one is a string which draws a pencil to and fro along a cylinder in the direction of its length, which cylinder revolving on its axis by means of clockwork once in twenty-four hours, is covered with paper, on which the pencil-marks are made. The ground of Mr. Glaisher's approval of this instrument is the preference of curved levers over springs, as well as its inexpensive simplicity.

M. Soleil, a French observer, who, if there is anything in a name, should be an apt scholar in the department he has chosen for investigation, has invented an instrument to illustrate the invisibility of light, which he calls a tenebroscope. It is a tube blackened on the inside, having one end open and the other closed, with a wide opening in the course of its length, by which a strong light is admitted crossways through it. On applying the eye to the open end of the tube, this stream of light is perfectly invisible; but the raising of a small ivory ball into the course of its rays, by means of a trigger, reveals its existence by reflecting a portion of its light. After realising the fact of the invisibility of light by the optical demonstration thus afforded, we contemplate with a new interest the heavenly bodies set in the firmament "to give light upon the earth, and to rule over the day and over the night." M. Soleil has also invented a new micrometer, which the Abbé Moigno exhibited to the members of the Association for the Advancement of Science at their Congress at Newcastle-upon-Tyne. It consists of two Ramsden's eye-pieces,—one fixed near the object to be measured; the other moveable, to suit the vision of the observer, with a ruled glass micrometer-plate placed between them. The Abbé explained that the magnifying power of the eye-piece being ascertained by a comparison of the object as seen directly with the same object seen through the micrometer, it became, by certain adjustments, applicable to the telescope, microscope, and even to goniometry.

Mr. W. Symons has effected some improvements in marine and mountain barometers, and in maximum thermometers, with indices, which appear to be of value. Marine barometers, as before constructed, were liable to fracture from sudden concussions, such as the firing of a large gun. This is one of the disabilities Mr. Symons has removed by substituting an elastic support for the tube for its usual rigid fixture into the cistern. Mr. Symons has distributed a considerable number of his thermometers in which he has substituted a composition, the basis of which is clay, for the graphite generally used, which, owing to occasional impurities, sometimes corrodes the mercury and soils the tube, and has been rewarded for his numerous experiments by hearing of no failure. Two French *savans* have also turned their attention to variations of these instruments. The Abbé Jeannon has devised a free-air barometer and thermometer of peculiar sensitiveness; and M. Naudet has constructed a metallic, or "holosteric," barometer.

The telegraph, like our railroad system, is looked upon by many as at a comparatively low stage of development to that it may eventually attain. Hence both theorists and practical men have turned their attention to this invention with much earnestness. The difficulty of transmitting messages across seas no longer existing, we can scarcely believe that there ever was one. We look forward to amplifications or simplifications that will enable the telegraph to print its message, and even to speak it. Morse's instrument requires four waves for each letter, and the dial seven; but Mr. D. E. Hughes has produced a telegraph that requires but one electric wave. It has twenty-eight keys, like those of a piano, each of which corresponds to a letter, or number, or stop. When one of these keys is depressed it brings a detent in contact with a pin corresponding to that letter on the circumference of a revolving type-wheel, stops it, and at the same time sends an electric wave to the distant station where an electro-magnet detaches a similar detent, and, after stopping the same letter, a revolving cane presses a slip of paper against the type and takes off an impression. The keys may be touched, one after the other, with this result, nearly as quickly as one would touch those of a piano, and would render four words per minute a length of 2,800 miles, or six words in the same time a distance of 2,000 miles, or ten words per minute 1,000 miles, or twenty-four words per minute a length of 500 miles. Bonelli's telegraph consists of two tables of cast iron placed inversely to each other at the corresponding station, each provided with a miniature railway, over which run two waggons, one containing the type-set message, the other the paper, and two combs formed by the extremities of the wires of the line, one of which touches the type at one station while the other passes over the prepared paper at the other. A spring catch to each of the waggons sets them free to move by the closing of an electrical current. Mr. W. Cook, who furnished particulars of this instrument to the Association for the Advancement of Science, asserted that a well-considered system of counter-currents had completely annihilated the inconveniences which, from the time of Bain to the present moment, had existed in electro-chemical telegraphy, and that no difficulty could be experienced in working it either on long or short distances. Mr. W. Ladd proposes to convey from station to station a musical note or sound which, divided into various lengths and combinations, would form a sound alphabet similar to the signals written by Morse's telegraph. This instrument consists of two pieces of apparatus, the one for transmitting the signal having a small mouth-piece. We may best describe them in his own words:—"On the right-hand side there is a finger-key, forming part of the circuit, and an electro-magnet, with a vibrating armature and binding-screw to connect with one of the line wires. Within a case, under a glass cover, is an elastic membrane, in the centre of which is fixed a platinum plate in connexion with the finger-key. A light piece of angular metal, resting on three pins, is so placed that the pin at the angle rests on the centre of the membrane, the other two resting in cups on its edge, so as to allow of free motion on the points. In the body of the receiver box is suspended a soft iron core, surrounded by a coil of silk-covered wire, one end of which is in connexion with the finger-key and the other with the binding-screw. The method of producing sound in the receiving instrument depends upon the fact that, at the moment of magnetizing or demagnetizing a piece of iron, there is an alteration in the arrangement of the particles, which gives rise to a slight ticking noise. Having connected the transmitter, by means of an insulated wire, with the receiver, and the binding screws having been brought in connexion with a battery of three or four elements, if the finger-key on the transmitter be pressed, the person at the receiving station hears the ticking noise." When a sound is made into the mouth-piece, the membrane vibrates and breaks contact between the pin and plate in its centre, causing the iron coil in the receiving instrument to be magnetized and demagnetized according to the number of vibrations with a musical sound. The production of exact *fac-similes* of pictures, or music, or writing, is another phase of this wondrous power. M. Casselli has elaborated Mr. Bakewell's principle by the contrivance of two cylinders moving at the two stations synchronously by mechanical means of his own invention. For the purpose of transmitting short-hand accounts of speeches at public meetings, or other news, this would appear to be likely to be useful.

Professor Chevallier has devised a little instrument for ascertaining the height of a cloud. This consists of two horizontal jointed rulers, graduated from the centre of the joint, the unit of gradation being the length of an upright sliding-piece, movable upon either of the rulers. To take the height of a cloud, one branch of the rulers is directed towards the shadow of a cloud, the horizontal distance of which shadow from the place of observation can be ascertained; and the other, with the vertical sliding-piece, is directed towards a vertical line drawn through the point of the cloud which casts the shadow. When the inner edge of the sliding-piece is made to touch the inner edge of the other horizontal ruler, an exact miniature representation of the known horizontal distance of the shadow from the observer is given on the ruler and sliding-piece, as well as the height of the cloud above the horizontal plane on which the shadow falls. Clouds, by-the-bye, have been recently found to exercise a peculiar influence upon photographs of scenery. Views taken beneath the clouds do not reproduce distant details, such as the foliage and stones on hill-sides. The magnifying-glass applied to them reveals only a bare and hazy surface, or indistinctness. Those taken above the clouds, on mountain tops, give the minutest details at the distance of miles. The photographs taken by Professor C. Piazzi Smyth, in Teneriffe, exhibit this fact markedly. Those taken at high elevations depict every little bush upon a hill-side four miles and a half distant from the camera.

Within the last few days, Mr. Alexander S. Herschel described, in the course of one of his lectures, delivered at the Royal Institution of Great Britain, upon meteorology and storm-warnings, a new marine fog-signal. This is proposed by its originator, Mr. H. T. Humphreys, to be placed on dangerous shoals and rocks out at sea, or upon headlands in great channels of communication subject to fogs. It consists of a large wrought-iron tank and a tall tower, furnished with such contrivances within that the action of the tide will cause it ever and anon to utter a loud shriek, such as is produced by the steam-whistle. These recurring screams, or warnings, made by the waves themselves, would acquaint mariners of their proximity to danger, both in fogs and in the dark. Mr. Herschel remarked, and we agree with him, that it was impossible to over-estimate the importance of such a contrivance to the maritime interests of the world. If we were only to count up the fine ships and brave crews that have gone down to the bottom of the deep on one spot—say the Goodwin Sands—for the want of a fog-signal, we should beat our breasts in horror of the apathy or penury that withheld it, were it ever so costly. Mr. Humphreys estimates that his Tide-shriek, or Clamor Æstus, would not exceed the sum of 8,000*l.* or 9,000*l.* in such a situation as that mentioned; and this does not appear to be extravagant, considering that it is self-acting, sounding all day and all night, week after week, year after year, requiring only the occasional removal of such seaweed as would find its way through gratings provided for its detention, or that became detached from its growth in the interior, to keep it in working order as long as it would hold together. It is proposed to form the whole edifice of plates, angle irons and rivets, upon a foundation made of screw piles, or otherwise according to the nature of the site, the whole being stayed and strutted from within by lattice girders, diaphragms, gusset plates, &c., to such an extent as would render it impregnable to the severest storms. The contents proposed are the apparatus to produce the noise, called the hammer-whistle, and gear to raise a body of water to a tank formed by the sides of the tower, by means of which, in times of slack water or when the tide gives out no power, the whistling would still go on uninterruptedly. Thus the tower is intended to serve a further purpose than merely to raise the whistle above the waves, or the densest strata of fog. Two reflectors duly shaped for the purpose into paraboloids of revolution would concentrate the sound, and reflect it to the circumference of a circle, the radius of which would be its greatest audible distance. Two turbines, provided with valves to regulate their action, would admit the tidal waters at the base of the tower, and drive pumps of lifting power proportional to the amount of available effect to be got out of them. These pumps, working alternately according as the outward or inward flow turbine was in motion, would fill the tank by means of ascending pipes. Thus the tidal waters in entering and leaving apertures in the base of the large tank, give out a certain quantity of power, which is taken up by these two turbines; and this power is applied to drive two pumps, which keep the smaller tank in the tower continually in the process of being filled. The power resident in this tank is abstracted to sound the whistle by the following means:—A pipe leads from the tank to another, but slightly smaller turbine, which is kept revolving in one direction. The shaft or axle of this turbine drives a pinion, which works into the teeth of a large wheel, and so drives a cam in continual revolution round its axis, which slowly raises and suddenly drops a heavy hammer block on to the piston of a small air chamber which is in communication, by means of a pipe, with a large steam whistle placed at the top of the tower. The hammer block thus allowed to fall on the piston of the whistle chamber strikes it with considerable accumulated force, and by the sudden compression of the contained air causes it to rush through the whistle in a strong and violent blast, which will make it shriek in a very marked and peculiar manner, strikingly distinguishable from and over or above other sounds heard at sea. We are glad to find attention has

been turned to this subject, as we so recently called attention to the inefficiency and scarcity of fog signals. The perils incurred by the approach and presence of fogs—dreamy, damp, and dread visitors—are surely capable of diminution.

Such are a few of the results of recent study of the possibility of extending our knowledge, and improving our appliances in certain directions. Astronomy, perhaps, more than any other department of science, is most dependent upon, as well as indebted to, modern improvements in instruments; but the beautiful contrivances now in use at Kew and elsewhere, by which the heavens are photographed and surveyed, the heavenly bodies catalogued, and space explored till this globe, with what we consider its interminable forests, inaccessible mountains, untraversed tracts, and unnavigable oceans, yet closed to man, is dwarfed to a speck, require separate mention.

A DEATH MARCH IN INDIA.

IF new instances were needed to show the want of sanitary knowledge, or, at any rate, of the use of this knowledge, amongst the officers of our army, the recent fatal march of a detachment of artillery from Mhow for Mahableshwur would be sufficient. It affords a fearful example of the want of knowledge of the laws of health which is shown by those who, in chief command, have charge of the lives and health of large numbers of their fellow men. As our readers may have seen, after three marches from Mhow, the ill-fated detachment arrived at Bulwara on the 15th of May, in good health (they left the first-named place on the 13th of May). At Bulwara the cholera broke out, and, day after day, cases became so numerous, that the detachment was sent back to Hursora, a village 3 miles from Mhow. Here the authorities had made every needful arrangement. Fresh tents were pitched, and all necessaries were supplied; *and then the mortality* (so say the reports) *ceased*,—another instance of the certainty of the possibility of stopping this pestilence by means which can be easily obtained by those who are willing to use them.

At present the number of the detachment which was attacked by this deadly enemy is not exactly known; but it is said that the force did not count more than 120, and that, during this march, which occupied only seven or eight days, 21 men, 1 woman, and four children died,—in all, 26 deaths, or nearly a quarter of the detachment.

All past experience and well-directed inquiry show that the cholera, by the wise use of medicine and by the choice of good resting-places for troops, can be as surely kept in check as a well-trained horse can be by the skilled hand and the bridle, or the well-lined ship by the properly-hung rudder.

In connexion with this fatal march, we cannot but think of its increased terrors if 2,000 or 3,000 men and the camp attendants had been moved, instead of 120. In an army of 3,000 we should have had, perhaps, 700 deaths. In the notices of the Crimea, and, indeed, in all the accounts we have of modern warfare which have been written since the truths of sanitary science have become better understood, we see that the number of those who have been actually killed in the raging of the battles is but trifling in comparison with the deaths which occur from the want of clothing, food, medical treatment, the ill-chosen position of camps, and the abominable lodgings which are provided for both the healthy and the sick.

It is now several years since the black shadow of the coming of the war with Russia urged us to give notes of military preparation, after a long period of comparative peace. We went to Aldershott at the first formation of the camp there, chiefly for the purpose of gathering some notes for this journal, and the scene of confusion which met the eye would have struck any one except those who were biassed by military ideas as most extraordinary. The operations which were going on would have seemed to any one possessed of common sense, ridiculous, and worse than useless. We had here in this locality no enemy to contend with except that natural one which would strike at the health, and even the lives, of those splendid regiments of picked men; and yet, although the distance from London by rail, and a short way by other conveyances, might have been managed in less than a couple of hours from the Horse Guards, it would seem that no sufficient person had been sent, before the men were marched to this isolated locality, to look even for water. The sight of the staff, at the head of which there was a famous general who is now no more, looking for water, would have made a subject which our contemporary *Punch* might have treated in his most effectively serious vein. It was laughable, but it had also its tragic side, as was soon after shown, in those terrible losses and privations which took place in the front of Sebastopol. Scarcely a tithe of the soldiers whom we saw cast with so little judicious care on this wild moorland are, we fear, now living. At the head-quarters, there was no little difficulty in obtaining information, and facilities for making inquiries, or even a due amount of civility from officers who, in the usual course of the life to which they had been accustomed, would have felt it a pleasure to have aided those who were engaged in seeking for the truth in connexion with matters in which the public are deeply interested. On this first visit, we left the camp with feelings of thankfulness for the long peace, and praying that, if this might be judged as an example, these islands might long be spared from the effect of military discipline. As years have passed along, the ideas and fears which we expressed at its formation have unfortunately been realized, and we fear that the mischief of this camp is not yet at an end.

For the sake of our soldiers—for the sake of the country—we hope that the rising class of officers will, in many respects, be different from the generation which is passing away, and that they will not forget that the *Times* reporter stirred up the nation to the sad state of the Crimean army; that the firm of Sir M. Peto made the railway from Balaklava, made the railway which took food and the munitions of war to Sebastopol; and then, that the medical staff, the Sanitary Commission, and the nurses under Miss Nightingale's charge, were the means of giving us victory in the Crimea; for without those aids the untiring skill of the officers and the endurance and bravery of the men would not have been sufficient to have prevented the Russians from driving both French and English into the sea.

Surely the loss of lives which has recently occurred in India will form a subject for the most careful inquiry. It is said, that before the troops moved from Mhow, it was telegraphed to head-quarters that the route had been attacked by cholera. *Is this really a fact?* Also, that no medical staff or medicine was forwarded. If this were the case, the persons who died were sent carelessly into death's mouth. Who is to blame for this? Surely, lest greater evil should happen, we should in this case undo the red tape and let it be known who is really responsible for those deaths.

THE OLD TOWN OF EDINBURGH.

BEFORE concluding our notice of the Old Town of Edinburgh, let us say a word or two on the few ecclesiastical buildings of the olden time which it yet retains. They are easily enumerated: the Royal Chapel of Holyrood; Magdalen Chapel, in the Cowgate; the *Collegium Sacerdotum*, in the College Wynd, to which we have already alluded; the collegiate Church of St. Giles; Queen Margaret's Chapel, on the Castle rock; and the beautiful Church of the Holy Trinity, whose stones now lie at the side of the Regent-road. They are the more valuable, that of all the churches erected since the Reformation, as was truly said by the late Dr. Memes, an eminent judge of such matters, there is scarcely one which is not a positive deformity.*

As St. Margaret's is undoubtedly the oldest building in Edinburgh, and probably the smallest, as well as the most ancient, chapel in Scotland: it merits priority of notice. It was dedicated to Margaret, the pious consort of Malcolm III., who died within the Castle, "which she had dignified by her residence and edified by her death," which took place in November, 1093. It is a small oblong building, on the south side of the High Battery, about 30 ft. in length, the walls being of equal height, and showing nothing of the division observed in the plan of the interior. Till very recently, this unique chapel was used as an ordnance lumber-room; to serve which purpose, the arch between the chancel and the apse had been bricked up. It has, however, of late years been restored, the blocked doorway opened, and the windows filled with stained glass.

In the north wall, close to the western extremity, in accordance with a common arrangement in small Norman chapels,* there is a plain square-headed doorway. There is another very similar to this in the west wall, with a small semicircular window over it. There is another window of the same description in the south wall, while the rest are square-headed, and were originally extremely narrow.

The chapel consists of a chancel measuring 16 ft. 4 in. by 10 ft. 4 in., and of a semicircular apse 10 ft. 4 in. long by 9 ft. 7 in. wide.

The semicircular arch, which separates the chancel from the apse, is of beautifully-wrought Norman work, and consists of two zigzag or chevron-moulded orders, with a trigonal hood, finished on the intermediate face with a string of lozenge-shaped ornaments, the pattern of which is changed as it approaches the springs of the arch. Within the apse the arch presents but one order, and has no hood. Two pillars, most probably cylindrical, have originally supported the arch; but have long since disappeared, The capitals, however, still remain, and two of the bases. The former are escalloped, and are surmounted by heavy abaci, which are returned on both sides of the arch.

The roof the chancel is modern. The apse has an alcoved ceiling, devoid of ornamentation. The east window of the latter is a plain square-headed trefoil.

Undoubtedly one of the most interesting of the antiquities of Edinburgh is the little chapel whose antique battlemented tower and spire arrest the attention of the passer along George the Fourth's Bridge, and which was erected "to the praise and honour of Almighty God, and of his mother the blessed Virgin Mary, and of Mary Magdallen, and of the haill celestial court." The chapel, along with a hospital for the support of seven poor men, was left by the will of Janet Rynd, the widow of an opulent citizen, Michael Macghen, in trust to the Corporation of Hammermen. The charter is dated 1505, which gives us an approximation to the date of the building. The steeple, however, is of more recent times, for one of the tablets on the walls of the chapel records that "John Spens, burgess of Edinburgh, bestowed a hundred lods of Westland lime for building the stiple of this chapell, anno 1621," and the bell bears these two inscriptions round it in Roman letters: "God Blis The Hammermen of Magdalene Chapel," and "Soli Dei Gloria. Michael Burgherhŭys Me Fecit, Anno 1632."

Little can be seen of the exterior of the chapel beyond the north doorway, and the square tower and steeple which surmount it. The windows on either side of and above the doorway are restorations,—if, indeed, the word is admissible here,—in a style quite incongruous with the rest of the building. The tower is square, and divided into four stages by string-courses. Each side of the third and fourth stages has a square window, with good mouldings; and in the fifth there are pointed-arched windows filled with louvre boarding, and partially concealed by quaint-looking convex clock-faces. The upper part of the tower has a battlemented parapet resting on small but neat corbels, from which project curious cannon-shaped gurgoyles. From within the parapet rises a graceful octagonal spire, finished with a weathercock. The angles of the octagon are ribbed, while a centre rib divides each of the eight faces.

In an ornamental stone tablet over the door are sculptured the crown and hammer, the armorial bearings of the incorporation of hammermen, with the date 1553. On the pediment above it is the date 1649, and at the sides are two quaintly-sculptured figures, the one with a hammer, and the other with a chisel.

The interior contains some fragments of the original painted glass, which by some fortunate chance escaped the iconoclastic destruction of the year 1559. Among these are a figure of St. Bartholomew, and the royal arms of Scotland, encircled in a wreath of thistles, those of the Queen Regent, Mary of Guise, within a laurel-wreath, and those of the foundress and her husband. With the exception of the Bartholomew, they retain all the brilliancy of colour which distinguished the work of the old glass painters. There is a number of mural tablets on the north and east walls, and at the east end is a sculptured slab, with an inscription round its border,

* "Edinburgh Literary Journal," vol. i. p. 25.

* The chapel in the castle of Craigmillar, situated a mile and a half to the south of Edinburgh, may be cited as an instance.

in old Gothic letters, which records the death of the foundress. Her armorial bearings, and those of her husband, impaled on one shield, occupy the centre of the slab. It is extremely probable that this is the top of an altar tomb, being level with a wooden platform, which has been erected in modern times.

This chapel is interesting from the fact that John Craig, a converted Dominican monk, who made his escape from the dungeons of the Inquisition at Rome, and was afterwards the colleague and successor of John Knox, and who refused to publish the banns of marriage between Queen Mary and Bothwell, preached in it for a considerable time in Latin, having, from his long absence from his native country, forgotten the use of its language.

The body of the Marquis of Argyle lay in this chapel for some days in 1661, while his head was affixed to one of the gables of the Tolbooth, until it was removed to the family sepulchre at Kilmun.

The chapel is situated on the south side of the Cowgate, and is now used as a place of worship by a congregation of Dissenters.

Come we now to the Collegiate Church of St. Giles:—

"Hoar relic of the past, whose ancient spire
Climbs heavenward amid the crowded mart;
Keeping as 'twere within the city's heart
One shrine, where reverend thoughts may yet retire;
And dreaming fancies, from the world apart,
Wander among old tales, of which thou art
Sole relic. Is it vain that we inquire
Somewhat of scenes where thou hast borne a part?
Mine own St. Giles! old fashions have gone by,
And superstitions,—even of the heart,—
Thyself hast changed some wrinkles for a smart
New suit of modern fashion. To my eye
The old one best beseemed thee; yet the more
Cling I to what remains, the soul of yore."

In these beautiful lines, the poet not unnaturally mourns sadly over the changes effected on this building, more particularly in the year 1829. The entire structure west of the central tower was then in a manner rebuilt; the most of the windows were restored in a mixture of bad Flamboyant and worse Third-Pointed; while the interior was impaired,—nay, all but ruined,—by the erection of unsightly galleries and pewing. The great eastern window is fortunately an exception to the bad taste displayed in these repairs, the tracery being an exact *fac-simile* of the original. The interior of the choir remains on the whole in a very perfect state of preservation; and the graceful open lantern, which forms so conspicuous an object to persons approaching the city, remains as it was rebuilt in 1648 on the model of the original tower. The greater number of the numerous altars and chapelries, which pious people had founded within the church through successive ages, was destroyed by the blind zeal of the Reformers.

The main portion of St. Giles's was doubtless erected towards the close of David I.'s reign, or in that of his successor, Robert II. In 1466 James III. erected it by charter (it had been merely a parish church before) into a collegiate church for a provost, a curate, sixteen prebendaries, a sacrist, a bedel, a minister of the choir, and four choristers. About the same time, the choir was lengthened by the addition of the two eastmost arches, and had a clerestory added to it.

The church is cruciform in plan, with a tower at the intersection of the transepts by the choir and nave.

The choir is 88 ft. long by 26 ft. 7 in. wide, with north and south aisles, each about 20 ft. wide. The architecture is very pure Middle Pointed. The four piers on either side at the west end are plain octagons, with capitals consisting of one or two sharp-edged mouldings, surmounted by square-edged abaci. The two eastmost arches, those last erected, are wider and loftier than the others; the pillars, one of which is a respond, being formed of a cluster of eight large-pointed half-rounds, divided by triangular flutings. The capitals are ornamented with mouldings, many of which are cut out in an ogee curvature, and are decorated with cherubs' heads and blazoned shields, which project and hang down from the cardinal faces of the abaci. The north-east, or King's Pillar, as it is styled, bears on its east and west sides the royal arms of Scotland; on the north side, the arms of Mary of Gueldres impaled with the royal arms; and on the south those of France. On the pillar opposite are the city's arms, those of "the Good Bishop Kennedy," of Nicolson, and of Preston of Craigmillar. The pier arches are obtusely pointed, the two farthest east being loftier and set wider apart than the others. The bases of these piers are fully spread, 3 ft. in height, and richly ornamented with foliated sculpture. The mouldings, among which the ogee prevails, follow the arrangement of the shafts of the column. The bases of the plain piers are concealed by the modern flooring.

The roof of the choir is beautifully groined, the ribs being tied at the intersections by a rich variety of bosses, some of which are very large. On the centre boss, at the division of the two eastmost compartments, is a large shield, with the monogram of Our Lord, I.H.S., and on that next it, round a carved centre, is the abbreviation: "Ave Gra. Pla. Dus. Tecu" (*Ave Maria, gratia plena, Dominus tecum*, the same legend as that we have mentioned in the Collegium Sacerdotum in the College Wynd). The suspended vaulting-shafts have floriated capitals and corbel or bracket terminations, and their semicylindrical rolls are banded together by a string-course, which runs along the clerestory beneath the windows.

The aisles have vaulted roofs, carrying plain chamfered transverse and diagonal ribs, with shields and foliage-knots at the intersections.

An additional aisle, of three arches, to the south of the choir, has a finely-groined roof. It is known as the Preston aisle, having been erected in 1454 by the city of Edinburgh, in gratitude to William Prestoune, of Gortoune, for having presented the city with the arm-bone of its patron saint,—St. Giles. The charter sets forth, "yat forasmekle as William of Prestoun, the fadir, quham God assoillie, made diligent labour & grete menis, be a he and mighty Prince, the King of France, & mony uyr Lordis of France, for gettyn of the arme bane of Saint Gele;—the quhilk bane he freely left to our moyr Kirk of Saint Gele of Edinburgh, withoutyn ony condition makyn;—we, considrand ye grete labouris and costis yat he made for the gettyn yrof, we p[ut] as said is, yat within six or seven zere, in all the possible & gudely haste we may, yat we sal big ane ile, furth fra our Lady Ile, quhare ye said William lyis in the said ile, to be begunyin within a zere; in the quhilk ile yare sall be made a brase for his crest in bosit work; and above the brase a plate of brase, with a writ, specifiand the bringing of yat relik be him in Scotland, with his armis; & his armis to be put, in hewn marble, uyr thre parts of the ile."* The privilege was further granted to Preston's lineal descendants of carrying St. Giles's arm-bone in all public processions. This relic, as well as a wooden image of the saint, were held in high veneration, until the reformed faith began to take root. In 1553, Sir David Lindesay, of the Mount, whose satirical exposure of the vices of the clergy had no small share in the overthrow of the Roman Catholic religion in Scotland,† published his "Monarchie," in which he thus refers to the bearing of the image of St. Giles in public procession:—

"Of Edinburgh, the greit idolatrie,
And manifest abhominatioun,
On thair feist day, all creature may see:
They beir ane auld stok image throuch the toun,
With talbrone, trumpet, schalme, and clarioun;
Quhilk hes bene usit mony ane yeir bygone,
With priestis, and freiris, into processioun,
Siclyke, as Bell was borne throuch Babylone.

Fy on you, freiris! that usis for to preiche,
And dois assist to sik idolatrie:
Quhy do ye nocht the ignorant pepill teiche,
How ane deid image carvit of ane tre,
As it war haly, suld nocht honourit be;
Nor borne on burges backis, up and doun:
Bot, ye schaw planelie your hypocrisie,
Quhen ye pas formest in processioun.

Fy on yow, fosteraris of idolatrie!
That till ane deid stok, dois sik reverence,
In presens of the pepill publicklie;
Feir ye nocht God, to commit sik offence?
I counsall yow do yit your diligence,
To gar suppresse sik grait abusioun:
Do ye nocht sa, I dreid your recompence,
Sal be nocht ellis, bot ciene confusioun."

The "recompence" was not long of following. In 1558 the image was carried off from the church by the mob, who first drowned it in the North Loch as an adulterer (!) or encourager of idolatry, and then burned it as a heretic.‡ This occurred a few days before the 1st of September, the anniversary of St. Giles, on which day the image was wont to be borne through the town by the clergy in procession. A substitute, however, was obtained for "the auld St. Gele," the priests borrowing a small statue of the saint from the Grey Friars. This they secured with iron clamps to the fertorie or shrine, in which it was borne aloft. On the *fête* day, accordingly, this image was borne with great pomp through the streets of Edinburgh, a large assemblage of the clergy and the Queen Regent taking part in it. No sooner had the Queen left it, to go to dinner, than, as John Knox says, "some of them drew near to the idol, as willing to help to bear him up, and, getting the fertorie upon their shoulders, begnane to shudder, thinking thereby the idol should have fallen. But that chance was prevented by yron nails. Then began one to cry, 'Down with the Idol! down with it!' So, without delay, it was pulled down. The patrons of the priests made some brags at the first; but when the priests and friars saw the feebleness of their god, they fled faster than they did at Pinkey Cleugh. One of the professors, taking Saint Giles by the heels, and dadding his head to the causeway, left Dagon without head or hands, exclaiming, 'Fy on thee, young Saint Giles, thy father would not have been so used!' The friars fleeing, down go the crosses, off go the surplices, round caps and cornets with the crowns. The Grey Friars gaped, the Black Friars blew, the priests panted and fled, and happy was he that got first to the house, for such a sudden fray never came among the generation of antichrist within this realm before."*

The arm-bone of St. Giles was probably lost in this riot. At any rate, it is not heard of again.

There is one other incident connected with St. Giles and the establishment of the Presbyterian forms of worship, for which we must find a place. Charles I., who was bent upon the establishment of episcopacy in Scotland, erected Edinburgh into a diocese, and appointed St. Giles's as its cathedral. On Sunday, the 23rd July, 1637, the dean, clothed in a surplice, ascended the reading-desk and opened the service-book. Immediately confusion and uproar ensued. The dean being quite non-plussed, his bishop called to him from the gallery to proceed to the collect of the day. The dean was about to do so, when an old *green wife*, Jenny Geddes by name, seizing the cutty-stool upon which she sat, and which is still preserved in the Antiquarian Society's Museum, hurled it at his head, exclaiming, "Colic! De'il colic the wame o' thee! Out, thou false thief, dar'st thou say mass at my lug?"† The tumult became general, and the magistrates had great difficulty in clearing the church. The bishop was mobbed on the street, and narrowly escaped with his life, being rescued by the Earl of Wemyss, who sent a party of servants to his aid.

Among the so-called improvements of 1829 was the demolition of the Regent Murray's tomb, which stood on the west side of the south transept, which is generally styled the old church. Fortunately, it has been re-erected within the last few years. "The good Regent's" remains were, after his assassination at Linlithgow, deposited in this tomb on the 14th of February, 1570, when "Johne Knox, minister, made ane lamentable sermond tuitching the said murther," and drew tears from the eyes of all present. A brass plate on the front of the tomb has the figures of Justice and Faith engraved on it, and the following inscription, which is from the pen of the accomplished historian, Buchanan:—

"Jacobo Stovarto, Moraviæ Comiti, Scotiæ Proregi;
Viro, ætatis suæ, longe optimo: ab inimicis,
Omnis memoriæ deterrimis, ex insidiis extincto,
Ceo patri communi, patriæ mæreus posuit."

To the left of this inscription is the motto, "*Pietas, sine vindice, luget*;" and on the right side, "*Jus exarmatum est*;" while above are sculptured his armorial bearings.

This part of the church was long an open lounge for idlers, as also a place appointed for the payment of bills. Dining with Duke Humphrey has become proverbially synonymous with not dining at all; and a similar jest was at one time in vogue about the Regent Murray. Thus Robert Sempill says, in the poem already alluded to,—

"Then I knew no way how to fen' (struggle);
My guts rumbled like a Hurle-Barrow;
I din'd with saints and noble men,
E'en sweet Saint Giles and Earl of Murray."

To the east of this tomb is the sepulchre of the great Marquis of Montrose, whose scattered and mangled remains were re-interred there "very honourably and sumptuously" on the 7th of January, 1661.

* "Archæologica Scotica," vol. i., p. 375.
† "In fact, Sir David was more the reformer of Scotland than John Knox, for he had prepared the ground, and John only sowed the seed."—*Pinkerton*.
‡ Calderwood's History, vol. i., p. 344.

* Knox's History, p. 95.
† Carlyle's "Cromwell," vol. i., p. 137.

The rich groining and vaulting of the south aisle of the nave, together with its light and beautiful shafts, merit notice.

The beautiful open lantern, which surmounts the square central tower, has been much and deservedly admired. It resembles somewhat the lanterns of St. Nicholas, at Newcastle; King's College, at Aberdeen; the Tron at Glasgow; and Chambord, in France,—all of which, however, it is generally admitted to surpass in grace and beauty. These had merely been formed by two crossed arches springing from the corbels of the tower; but in St. Giles's there spring from within the gurgoyled and open quatrefoiled parapet eight beautifully crocketed flying buttresses, converging towards one another, and supporting an octagonal panelled piece of masonry, from which, amid a cluster of small pinnacles rising tier over tier, rises a small and graceful octagonal spire, terminating in a cone and weathercock. The parapet, which besides being pierced by quatrefoils, has cusps on the upper edge, rests upon corbels, from which project cannon-shaped gurgoyles. Speaking of St. Giles's and the old Parliament House and Close, one has said,—

"A scene of grave yet busy life
Within the ancient city's very heart,
Teeming with old historic memories, rife
With a departed glory stood apart.
High o'er it rose St. Giles's ancient tower
Of curious fretwork, whence the shadow falls,—
As the pale moonbeams thro' its arches pour,—
Tracing a shadowy crown upon the walls."

We find allusion made to this crown in a ballad descriptive of Gavin Douglas's visit to St. Giles's altar immediately after the disastrous battle of Flodden Field, quoting a verse or two of which we shall take leave of this old collegiate church.

"—— Douglas sought nigh the noon o' night
The altar o' gude Sanct Giles,
Up the haly quire, whar the glimmerand light
O' the Virgins' lamp gae the darkness sight
To fill the eerie aisles.

Belyve, as the boom o' the mid-mirk hour
Rang out wi' clang an' mane;
Clang after clang frae Sanct Giles's tower,
Whar the fretted ribs like a boontree bower
Mak a royal crown o' stane.

Or the sound was tint—'fore mortal ee
Ne'er saw sic sight, I trow;
Shimmering wi' light ilk canopy,
Pillar an' ribbed arch an' fretted key,
Wi' a wild uneardly low." *

MR. FERGUSSON ON THE HOLY SEPULCHRE.

IN your issue of the 3rd ult., a short notice appeared of Mr. Fergusson's new volume on the Holy Sepulchre and Temple of Jerusalem.

In the preface of this work, Mr. Fergusson complains of the treatment which it has received, and intimates that it is his desire that his theory should be carefully investigated, and that any arguments which can be adduced against it should be brought forward, in order that what is good in it may be established, and what is erroneous may be laid aside.

Most of your readers are probably aware that there exists at Jerusalem at the present day a church which is traditionally held to occupy the site, and to inclose the relics, of that sepulchre in which our Lord was laid, and which is also generally believed to be built on the same spot on which stood the basilica which Constantine erected in Jerusalem on the discovery of the Cross and tomb by the Empress Helena, his mother.

This, however, is not the opinion of Mr. Fergusson, for there is also at the present day, on the opposite side of the city, a large level space or inclosure, measuring about 900 ft. from east to west, and 1,500 ft. from north to south, in the centre of which, on a slightly-elevated platform, is an octangular building with a magnificent dome, generally supposed to have been erected by the Caliph Omar in the seventy-second year of the Hejira, and which has received, from the extraordinary excavated stone or rock in the middle of the drum, the name of the "Kubbet Es Sacrah," or Dome of the Rock. Now this mosque, placed in the centre of an inclosure which is traditionally supposed to have been occupied in the time of our Lord by the magnificent temple of Herod, Mr. Fergusson supposes to be the very building which Constantine erected over the site of the Holy Sepulchre.

The opinion of so eminent an architect must, of course, be of great weight in treating of such a subject; but the theory is in itself so extraordinary and unexpected, that I would ask your permission to make a few remarks concerning it.

The first argument which Mr. Fergusson brings forward to prove the identity of this Mosque of Omar and the church of Constantine, is the date of the style of the former. He gives us the latest buildings previously to the time of Constantine, and shows us what style prevailed at that date. The arch had begun to supersede the horizontal entablature, and the arched and flat styles were struggling together. In the one instance which he gives, the palace of Diocletian at Spalatro, built towards the close of the third or at the commencement of the fourth century, the entablature remains above the pillars, but the architrave is rounded into arches supporting a horizontal cornice, while in another part of the building the whole entablature rises into an arch over the principal gate. The pillars found in this building are of the Corinthian order, and are mounted on "stools" or square blocks of stone.

Mr. Fergusson next gives an example of what style had become in the early part of the sixth century, and shows how an arch which in its ornamentation and moulding approaches nearer to the work of more modern times, had superseded the entablature, and was supported by a pillar no longer classic, but crowned with a bulging capital, contrasting greatly with the hollowed form of the Corinthian, which is covered with rich mouldings of conventional foliage. Between these two epochs Mr. Fergusson informs us that no example of style is to be found; but he infers a gradual change from the horizontal to the arched style, which must have been going on between the fourth and sixth centuries.

Mr. Fergusson next turns his attention to the style of the Mosque of Omar and to that of the Golden Gateway, a closed portal on the eastern side of the great inclosure.

In the first of these buildings he finds a style which he supposes to be transitional between the two before mentioned. Pillars, of Corinthian order, but of apparently late date, standing on "stools" like those of the time of Diocletian, support a horizontal entablature, of which the architrave, owing to the wide intercolumniation of the pillars, is only represented by square blocks of stone over each column, upon which stands a wooden cornice, the frieze being omitted. From this entablature, or, rather, from this cornice, spring regular semicircular arches, highly ornamented with Saracenic arabesques; and this structure of a horizontal cornice supporting an arch, Mr. Fergusson considers to be a natural transition from the first arching of the entablature to the formation of a regular arch. On the exterior side of the Golden Gateway, which is the next building that he mentions, a style of architecture is found which would appear to be of the time of Diocletian, namely, an architrave bent into the form of two regular arches, supporting a horizontal cornice; and this circumstance would seem to indicate the date of the Golden Gate as not later than the commencement of the fourth century, or about the same date as the Mosque of Omar. On the interior side of the gate-chamber Mr. Fergusson finds an order which he considers may be attributed to the same date. The closed entrance has on either side a pilaster, which supports a horizontal entablature, surmounted by an arch which is in the form of the arc of a circle, and on the opposite side of the chamber is a similar entablature and arch, while above the two rise flat domes with pendentives. The pillars in this building are of the Corinthian order, and the entablature is not structural, but merely ornamental, of which style of building no examples are found later than the fourth century, though they abound before that date; hence, and from the similarity of structure between the Golden Gate and the Mosque of Omar, Mr. Fergusson concludes that both buildings may be attributed to the commencement of the fourth century, the date of the Emperor Constantine.

He next compares these buildings to the various octangular edifices erected by that monarch in Europe, about the time that he built the Basilica of Jerusalem, and describes them as bearing a great resemblance to one another.

Thus Mr. Fergusson concludes that the Mosque of Omar and the Golden Gate are works of Constantine. The answer to this argument does not appear to be very difficult, for, first, there is some doubt concerning the contemporary date of the two buildings; and, secondly, there is some doubt whether either can be attributed to the time of Constantine.

1. If the order of the Golden Gate be compared with that of the Mosque of Omar, it will soon be evident how different they are. In the Dome of the Rock a pillar, which Dr. Richardson considers not to be truly classic, standing on one block of stone and supporting another, has for its capital one covered with deeply-indented leaves, from which the volutes rise with a graceful curve. In the Golden Gateway a pilaster which, far from standing on any stool, appears to have no base of any kind, is crowned with a capital of clumsily-worked leaves, unserrated and ungraceful, shorn of volutes, and with no architrave block above it. In the first building a screen (or entablature, as Mr. Fergusson calls it), made of wood, runs from pillar to pillar, unsupported by the wall, and is covered with mouldings, which, especially in the case of the graceful arabesque running along the centre, approach nearer to the Saracenic than to any classic style. In the Golden Gateway, a whole entablature, of which the modillions, dentils, and other mouldings are all classic, is built against the wall, and supports an unornamented arch in the form of the arc of a circle; while the arches of the Dome of the Rock are semicircular, or, according to Dr. Richardson, slightly pointed. Mr. Fergusson himself admits that, judging from style alone, the two would not be supposed to be of the same date, and gives as an answer that the temples which were built in Rome a century after the Flavian amphitheatre would, judging from style alone, be thought to be even earlier; but in the present argument, style alone is being considered, and if it differs, the conclusions drawn from it cannot be certain.

2. The second question which arises is, whether or no the style of the Mosque of Omar is really transitional; for although nothing could be more natural than that when the arch replaced the horizontal beam, a style more in accordance with circular work should replace the architrave, frieze, and cornice; yet that this should be affected by a transition from an arched architrave to a horizontal entablature supporting an arch, and thence to a regular arch, is, to say the least, not natural.

3. Mr. Fergusson himself points out the difference between the architecture of the Mosque el Aksah, of the seventh century, on the southern side of the enclosure, and that of the time of Constantine; yet in this building, and in the fourth building he mentions, namely, the Dome of the Chain, close to the Mosque of Omar, of which it is said to have been the pattern, we find other instances of the peculiar structure alluded to before, namely, a wooden beam or cornice over the pillars, supporting arches.

It may also be doubted whether or no this beam in the Mosque of Omar is entitled to the name of an entablature, for it is not natural that a stone architrave should support a wooden cornice belonging to the same entablature; and, again, it is doubtful whether the blocks above the pillars do really represent the remains of the architrave, for in the Saracenic architecture of Spain, even later than the seventh century, we find such blocks over apparently Corinthian pillars supporting arches only, and without cornice of any kind.

Again, it must be remarked, that this screen does not support the more important part of the building, for the dome, the drum, and the part without the screen, are of Saracenic architecture, such as is found in Egypt and Syria, as also are the pointed arches round the sacred stone and the graceful arabesques which cover the interior of the whole dome.

4. The fourth remark touches on the real style of the time of Constantine. There exists at Bethlehem, at the present day, a basilica, built, according to tradition, by that emperor, and mentioned by Eusebius and other writers as having been executed by his orders and completed during his reign. This has been proved in an apparently satisfactory manner by M. Vogüè, who has also shown that this building escaped the general wreck in which so many of the Christian churches perished. Surely to this building we should turn for an example of the style of the time of Constantine, especially considering that Eusebius states it to have been similar to the basilica of Jerusalem; but here we find a style which, though somewhat similar to that of the buildings of Constantine in Europe, is unlike that of the Golden Gate and the Mosque of Omar.

Again, although Mr. Fergusson affirms that no traces of the basilica are found in the present church, yet Mr. Vogüè has discovered there several remains which, from their style, he

* To be continued.

attributes to the time of Constantine, and from them he has made a restoration of the church and basilica fitting with the conformation of the ground and with the description of Eusebius, and forming a single edifice similar to that of Bethlehem. M. Vogüè has also proved that only one building existed in the time of Constantine, and that afterwards it was replaced by the four churches described by Arculphus.

5. Finally, if the buildings of Constantine in Europe are compared with the Mosque of Omar, they will be found to differ from it materially; for instance, in the tomb of the emperor himself, instead of pillar, cornice, and arch, we find a row of pillars supporting a light frieze and cornice surmounted by a second order of pillars, the only resemblance being in the octangular form of the building. This structure is nearer to that of the basilica of Bethlehem than to the Mosque of Omar.

Such is the answer to Mr. Fergusson's first proof of the identity of the Mosque of Omar and the holy sepulchre of Our Lord.

C. R. C.

DECORATIONS FOR DINNER TABLES.

ROYAL HORTICULTURAL SOCIETY.

IT will be remembered that Sir Wentworth Dilke, some time ago, offered three prizes for the best floral decorations for dinner-tables, or rather for the dinner-tables best decorated florally. Beautiful arrangement was the object sought, valuable fruit or flowers or china not being required. On Saturday last, the competition took place, and the judges made the following award,—

First prize, 10*l.* 10s., Messrs. W. P. & G. Phillips, 155, New Bond-street.

Second prize, 7*l.* 7s., Mrs. Dalton, the Haven, Ealing.

Third prize, 3*l.* 3s., Mr. A. D. Chapman, 22, Norfolk-street, Park-lane.

Commended: Mrs. Naylor, 7, Princes-street, Cavendish-square.

The following prizes offered by the proprietors of the *Gardeners' Chronicle*, for flowers grown in a room, were awarded as follows, viz.:—

Lady Doneraile, 9, Grosvenor-place, for a fine foliage plant, 10*l.*

Miss A. M. Williams, Sutton House, Highgate, for an orchid, 10*l.*

Spite of gallantry, the judges being ladies, we must dissent from their decision. The only table of the three rewarded that exhibited any originality and a right knowledge of how a dinner-table should be decorated, was Mrs. Dalton's, and to this the first prize was certainly due. The flowers, in small receptacles, quite flat, formed patterns on the table, and there was nothing whatever to interrupt the view. The colours of the flowers might have been better harmonised, but the thing was done on the right principle. The table to which the third prize was given (displaying some very well chosen flowers) had a heap of greenery in the centre that would render general conversation impossible. The same objection, in rather a less degree, applies to the first prize-table. We take the credit of having led in some quarters to a reform of our dinner-table in this respect, and have the more regret, therefore, that the judges did not keep it strictly in view. The only result of the present competition will be to advertise the wares of an already well-known and esteemed firm.

CONSUMPTION OF SMOKE IN FRANCE.

BY a ministerial decree published in January last, in France, it is enacted that * "All furnaces of boilers, of whatsoever class they be, are to consume their own smoke. Six months' delay is accorded to manufacturers to whom no notice was given at the time of authorisation to execute these last dispositions." Consequently, all attention has been directed to smoke-consuming apparatus, especially those of Beaufumé, Palazot, and Thierry; but none of these have yet offered a practical solution to the problem. Meanwhile, M. Alfred de Pindray, civil engineer at Novion-Porcien (Ardennes), has invented a system of furnace which has been for several months successfully at work in the large factories at Sedan and the neighbourhood. The firms of Chémery, de Labrosse Frères, E. de Montagnac et Fils, Bertèche, Baudoux, Chénon et C^ie, Collette, Villette, J. B. Vilain, &c., all first-class manufacturers, have borne testimony to the practical working of this invention, and to the economy of about 20 per cent. upon the old system of fire-grate. The absence of smoke is almost complete: we say, almost, because when fresh coal is put on there is a burst of smoke, lasting, however, only for 30 seconds. Mr. C. A. Castagne, spinner, at Wé, near Carignan, and consul of America in France, has certified to a saving of 35 per cent. by the use of this furnace. It is constructed, as usual, of refractory bricks: the sides are carried up vertically from the bottom of the ash-pit. Where there are two or more cylindrical boilers attached, the sides of the furnace are in line with the centres of the two outside boilers, and carried up as far as 4 in. below the bottom of the boilers. From this point the masonry contours the boilers as far as the junction with the main boiler, preserving a distance of 2¾ in. between the bricks and the boilers. If there be only one boiler, the sides of the furnace are carried up, so that if produced they would pass 3 in. *within* the width of the boiler at each side, and are turned off at 4 in. from the bottom of the boiler to contour it, as in the first case, leaving always the space of 2¾ in. all round. The combustible is placed at a distance from the boilers, in order to avoid the sudden bursts of heat to which they are liable when iron is placed too near the burning fuel. The ash-pit is rounded at the bottom, at the back of the grate, where it forms a quadrant to facilitate the passage of draught through the bars. M. de Pindray narrows in his furnaces for the following reasons:—He only requires 38¾ square in. of fire-grate per horse power; he utilises the radiation by approaching the sides of the furnace to those of the boilers; he augments in length what he diminishes in width; in given extra length to the grate, he utilises all the heat by giving time to the gases in front of the fire to dilate and become heated, so as to be inflamed when they arrive at the end of the grate, where they become in the highest degree incandescent and strike vertically against the boilers.

The grate-bars are inclined towards the back as follows: for a grate 16 in. long, 4¾ in. fall; for 18 in. long, 6 in. inclination; for lengths of from 3 ft. to 8 ft. 6 in., 8 in. fall; and above those lengths, 10 in. The bars extend, in all cases, throughout the whole length of the firegrate, and are of one single piece; their depth at the middle will be, for a grate whose length of bar is from 16 in. to 20 in., 8½ in.; from 21½ in. to 3 ft. 3 in., 1 ft.; and from 4 ft. 11 in. to the greatest length, 14 in. The width of the bars varies, according to the required rapidity of combustion and the draught, and the space between the bars depends upon the quality and nature of the fuel supplied. For feeding this furnace, when the door is opened, a damper must be shut to within half an inch of closing it; and before putting on fresh coal, care must be taken to cover every part of the grate with a pretty uniform thickness of burning coals, otherwise the fire will go out. As soon as the fuel is supplied the doors should be closed, and five minutes afterwards the damper opened one-half its width; after the lapse of another five minutes it may be opened to its usual working extent. The licence for the use of this patent is 4*l.* per horse-power. One payment only.

* See the *Builder*, vol. xxiii., p. 104.

THE HANDEL FESTIVAL, CRYSTAL PALACE.

THE festival, so far as it has proceeded, has proved most successful, and has given delight to thousands. As our publication will be in the hands of many readers in time for a word of advice to be of avail, we say go, this Friday, June 30th, and hear "Israel in Egypt" with its mighty choruses, and in which Mdlle. Patti, Madame Lemmens-Sherrington, Mr. Santley, and Mr. Sims Reeves, besides others, will sing. The sight alone of the vast orchestra filled with its thousands of executants, other thousands expectant in front, is a thing not to be forgotten. It may be true, in fact it is so, that the refinements of a solo singer can be better appreciated and enjoyed in an ordinary concert-room, such as Exeter Hall, than in the Crystal Palace, though few who heard Mdlle. Patti, on Wednesday, sing "Let the bright Seraphim," Mr. Sims Reeves, "Sound an Alarm," or Mr. Santley, "O Ruddier than the Cherry!" will recollect hearing them with greater delight; but in respect of the concerted music, nothing like it has ever been done elsewhere, and no such effects can be heard on any other occasions. Speaking still of the Selection performed on Wednesday, the first chorus (from "Saul") "How excellent Thy Name, O Lord," the closing chorus from the same oratorio, "Envy! eldest-born of Hell!" and the "Coronation Anthem," could not be listened to without the deepest emotion, and will long vibrate in the memory of many who listened. The previous pains taken to insure such a result must have been enormous, and for these, thanks are due to Mr. Costa and those who assisted in that direction; while for the arrangements which enabled such masses of people easily and pleasantly to come and go, and find their seats without difficulty, Mr. Bowley and Mr. George Grove, working unseen, deserve applause. The "Book" is well annotated by Mr. W. H. Husk, the Honorary Librarian of the Sacred Harmonic Society.

PARIS NEWS.

MONS. E. JANICOT, architect, has submitted to the Imperial Commission of the Universal Exhibition (1867) of Paris, a projected plan of a construction to serve as a permanent circular building, also as a covered field for military evolutions. He proposes a system of wrought-iron ties, solidly attached to the summit of a column or central tower, and fastened at the circumference of the building to a circular walling, so as to bind it together like an arch. By this means he proposes to unite to the stability of rigid bridges the indefinite span of suspension bridges, and to shelter under one roof the exhibition of 1867, 20 hectares (about 50 acres), half the extent of the Champ de Mars, without any obstacle or any other support but the central tower and the circular walling.

This tower is to be entirely of open work, and will consist of several stories, with exterior balconies, from which visitors can embrace a *coup d'œil* of the whole area. The walling of the circumference is proposed to be double, the space between the walls being, on the ground-floor, laid out in offices, staircases, &c., and on the upper story, in a circular gallery, 25 mètres wide, for objects requiring special lighting, such as painting and sculpture. There are to be four principal entrances and eight secondary doors. M. A. Oudry, engineer-in-chief of the Ponts et Chaussées, who constructed the iron bridge at Brest, has intimated his readiness to apply to this building, conjointly with M. Janicot, his system of rigid suspension with steel, as applied with success in his non-oscillating suspension bridges.

The assembly-hall of the municipal council of Paris at the Hôtel de Ville is to be decorated with four vast works by M. Yvon, the celebrated French military painter, representing memorable episodes in the history of the city. In chronological order the subjects will be,—The entry in state of Clovis, clad in Roman purple, into the capital; Philip Augustus, at the moment of leaving for the Holy Land, placing his children under the protection of the municipal body of Paris; François I., laying the first stone of the Hôtel de Ville; and the Emperor Napoleon III. signing the decree annexing the suburban communes to Paris.

As the present mains for the distribution of water through Paris have been insufficient, in consequence of the increased supply, larger conduits are being laid down in the Boulevard de Sebastopol, and other great thoroughfares of the capital, and the exchange will be continued until all the principal routes are provided with pipes of the increased calibre. These are placed in the *égouts* in two manners; those of the larger diameter are laid upon cast-iron pillars or supports, while the smaller tubes are supported on brackets let into the side walls of the sewers, with collars to retain the pipes in place.

Radiating from the centre of the Place de l'Etoile, at the upper end of the Champs Elysées, there are four grand avenues intersecting in the form of a cross, and eight secondary ones. The principal thoroughfares are the Avenues des Champs Elysées, Du Roi de Rome, De la Grande Armée, in line with that of the Champs Elysées, and the Avenue de Wagram, a continuation of that of the Roi de Rome. Between the first and second there are the Avenues Josephine and Jena, reaching through Chaillot to the river, at the Quai de Billy; between the second and third, the Avenues d'Eylau and De l'Impératrice communicating with the Portes de la Muette and Dauphine of the Bois de Boulogne; and between the first and fourth, the Avenues de la Reine Hortense and Fridland. All the above

have been pierced through and laid out. It only remains to complete the group, to open out the Avenues d'Esling and Du Prince Jerome, between the Avenues de la Grande Armée and De Wagram, for which the demolitions are to be commenced at once. The Avenue d'Esling starting from the Arc de Triomphe, will cross the Avenue des Ternes (or Boulevard Eugénie), at the Place Ferdinand, and join in with the Rue de Villers at its junction with the Boulevard Pereire, which lines the circular railway. The Avenue du Prince Jerome will start from the same point, and intersecting the Avenue des Ternes at the corner of the Rue des Acacias, will abut at the intersection of the Route de Courcelles with the Boulevard Pereire.

On the 19th ult. the justice of the peace was formally installed in the new Mairie of the seventh arrondissement, in the splendid mansion known as the Hôtel de Forbin-Janson, in the Rue de Grenelle St. Germain. This building, situated between a spacious court and a garden, has been successively occupied by several branches of the public service, and is well adapted for its new employment.

On the same day, the Association of Dramatic Artists of Paris held its general annual meeting, in the theatre of the Imperial Conservatory of Music, under the presidency of Baron Taylor. In course of the report read by M. Omer, it was stated that the society includes 2,641 members, and that the sums in hand amounted to 2,317,955 francs (92,718*l.*), the interest of which is, in the state funds, 58,500 francs yearly (2,340*l.*). There are twelve orphans provided for by the association. Besides the liberal contributions of all artistes of every grade, one of the most important sources of revenue for the Actors' Association is the Bal de l'Opéra-Comique, under the patronage of the emperor and empress. Most of the actresses did not appear at the ball, but had, nevertheless, purchased or transferred tickets for various amounts, varying from 900 francs to 20 francs. The emperor paid 1,000 francs for his *loge*, and Prince Murat and the Duchesse de Marmier, after having contributed also handsome sums, abandoned their seats for the benefit of the treasury.

At the iron works of Holmberg & Co., at Lund, a new invention has been applied, by which tubes of iron can be cast by centrifugal force. The machine is of very simple construction: it is composed of a cylinder, which can be opened and closed, and into which molten metal is poured. A rapid rotary motion being imparted to the cylinder, the liquid mass is pressed against the sides, and the result is the formation of a perfectly uniform and straight tube. The first trials of this machine, invented by a young workman named Auguste Larson, have been completely successful.

RIGA FIR IN FRANCE.

THE introduction of the growth of Riga fir in France has lately occupied the attention of timber cultivators in that country. Some short time ago the French consul at Riga consigned a large quantity of these seeds to Paris for the benefit of societies of acclimatation who might wish to make an experiment of the growth of the tree. Of all forest trees those of a resinous nature are the least difficult in the choice of a soil; they are therefore eminently suitable for stocking barren hills and chalky wastes on which nothing else will grow. Most of the trees of this sort in France are cultivated for their resinous produce, and furnish timber of an indifferent quality, whereas the Riga fir yields timber of a quality at any rate equal to either that of Memel, Dantzic, or Sweden, and can be always depended upon whenever durability and strength are requisite.*

Several doubts have been raised as to its probable success in France; but theoretically, considering that height in elevation above the sea compensates for the loss of a northern latitude, and that the flora of the high mountains of France and Savoy are identical with those of the Swedish and Siberian plains, a zone of land can easily be procured of an altitude of 120 metres above the sea corresponding to the wooded plains of Lithuania and Courtland. Besides this argument, direct experiment has been tried in the Department of the Eure, as far back as 1810, by the sowing of some seeds of Riga fir in the Harcourt domain. These sprang up in due time, and are now tolerably good specimens, having averaged, in 1860, 82 ft. in height and 4 ft. 3 in. in girth.

The ground suited for Riga fir is, firstly, that of a siliceous nature (sandy, argillaceous sands, slates, granites, &c.); secondly, calcareous soil, especially that containing sand or argil. The Société d'Acclimatation, in assigning the post of importance to Riga fir, has not neglected other resinous trees of various qualities, such as the Corsican and Calabrian pines, delighting in a silicious soil; the black Austrian pine, partial to calcareous regions and the towering mélèze or larch.

M. Bequerel presented, on the 15th ult., to the Academy of Sciences, a memoir on the influence of forests on climate, in which he discusses the statistics of forest clearing in France, and the resulting influence on water-courses and springs. He urges the immediate replanting of the hills as of the first necessity, in order to preserve the ground; stating that Great Britain, which has only 2 per cent. of wooded surface, and Spain, with only 3 per cent., are obliged to draw upon foreign markets for timber necessary for industrial purposes, while France has 16·7 per cent. of wood and forest. He warns the inhabitants of France to take steps at once, lest they be reduced to the same straits as England or Spain. The replanting of mountain lands and sandy plains, or even a portion of them, with resinous trees, is truly a sage measure; but it is, after all, an inadequate compensation for the loss of oak forests by clearing. The acclimating of the Riga fir, if successful, will no doubt go far towards remedying the evil done.

* "The Engineers' and Architects' Pocket-Book" (Lockwood), p. 128, says that Memel is best for size, Riga for quality, Dantzic for strength, and Swedish for toughness.

MASONIC MUSINGS.

THE GENIUS OF THE GREEK.

AGAIN to hallow'd haunts return'd,
Bright with names we all adore,
Where those hero souls that burn'd
Sanctified the soil of yore:
By the classic streams and meadows,
By each sunny shore and creek,
Draped with never-ending shadows,
Rich in genius of the Greek.

Pure unsullied love of labour,
Warm impulses, noble aims,
Back, when shepherd's crook and tabor
Hung on branches by the streams;
Where the olive and acanthus
Grew to grace that art antique,
In the fabled far Atlantis,
Rich in genius of the Greek.

Oh, ye bright inspiring fountains,
Springs of primal art and taste,
Rainbow, arch'd upon the mountains,
Scintillating pure and chaste.
Apostrophised, in ruin scatter'd,
By lorn pool, and lichen'd peak,
Old mighty marble shrines shatter'd,
Rich in genius of the Greek.

From out of ruins grand and solemn,
Streak'd with glaze of reptile slime,
Above each frieze and fluted column,
Clogg'd with damp decay of time,
Swelling forth from porch and portal
Immemorial echoes break,
Redolent of life immortal,
Rich in genius of the Greek.

Land of old heroic spirit,
Rise thine halo-wreathed head;
Names like thine for aye inherit
Glory from their mighty dead;
Heirs of art still unexampled,
Athens from your torpor speak.
Lo! he comes, the Goth who trampled,
Rich in spoil robb'd from the Greek.

Lamp of pristine Architecture,
Beacon in all distant time,
In your radiant reflecture,
Souls again will soar sublime.
Virgin art and beauty vernal,
Pointing heavenward ye bespeak
Triumphs matchless and eternal,
Crown'd in genius of the Greek.

CLINTON HOXY.

THE BELFAST ALBERT MEMORIAL COMPETITION.

THE general committee, instead of acting on the resolution to which they had come, as mentioned in our last, resolved at a meeting, on Monday last, to refer the four selected designs to the president and council of the Institute of British Architects, or any one deputed by them—the decision to be binding on the committee. It was suggested that each of the competing architects should be requested to send a statement through the committee to the arbitrators. But the competitors were to hold no direct communication with those gentlemen.

THE O'CONNELL MONUMENT COMPETITION.

THE committee, after rejecting the whole of the designs first submitted to them, are seeking to induce artists to waste more time and send in other designs with equally vague expectations. One of the competitors on being so applied to, in declining to submit a fresh design, wrote thus:—

"It is evident that, in the first instance, the committee did not know what they required; but, when their request was complied with by about sixty architects, they gleaned from the designs and reports what they really wished to have as regards style, size, height, and material; whereas they should, in the first instance, have availed themselves of professional assistance, to enable them properly to state their views; and, having failed to do so, it would have been but fair and honourable to have awarded the three prizes to those designs coming nearest to the views and requirements of the committee (in the first instance), however they might have failed in their instructions and positive ideas.

Having done this, they should have asked the three successful competitors to compete against themselves, to the more explicit and realised ideas of the committee gained by the first competition, and awarded the execution of the work to one of the successful three."

THE SALISBURY GRAMMAR-SCHOOL COMPETITION.

AFTER publicly inviting and receiving a number of designs from architects in competition, the town council have coolly returned them to the competitors, with the information that for a certain reason the scheme has been abandoned. By the offer of a prize they induce a number of horses to run, and, when the race is over, announce that they intend to give no prize. A correspondent says, with reason,—"Under the circumstances, I think the competitors are all entitled to some amount by way of remuneration for being thus misled."

It would not be amiss for the competitors to place the circumstances carefully before a lawyer, and learn what redress, if any, is obtainable. If the town council act as is described, they will to all intents and purposes commit a robbery, whatever their legal position may be.

LECTURES TO THE VOLUNTARY EXAMINATION STUDENTS.

WE are requested by some members of the Institute, who see the mistake made by their governing body, to state that the next lecture of the series will be given at 9, Conduit-street, by Professor Kerr, on Monday evening next, the 3rd of July, at eight o'clock, on the subject of "Constructive Science." Mr. Bell, Professor Hayter Lewis, and other gentlemen will follow, weekly, to complete the course. It is understood that these lectures are open free to young men of the profession generally. Up to this time, if we may judge from statements publicly made, these lectures, in consequence of the unfortunate hole-and-corner policy pursued, have not been so satisfactory as they might have been either to the lecturers or the lectured. Publicity is needed to obtain an audience, and induce regularity in arrangements.

THE SALISBURY HOTEL, FLEET STREET.

THE hotel erected in quiet Salisbury-square, Fleet-street, with a view mainly to the accommodation of the agricultural interest, especially the Farmers' Club, has been opened, and seems likely to be amongst the most successful of the fine edifices of the sort which all at once have sprung up about us. It contains nearly 100 bed-rooms, besides private sitting-rooms, private dining-rooms, and ladies' coffee-room, on the upper floors. On the ground floor are hotel coffee-room, 50 ft. long by 25 ft. wide; three rooms for the purposes of the Farmers' Club, the largest being nearly 40 ft. long by 20 ft. wide; a smoking-room; besides the ordinary managers' room, bar, service, &c. There is also, on this floor, a large dining-room or hall for public dinners, meetings, &c., 70 ft. long by 30 ft. wide, and above 20 ft. high: this can be used either for the hotel purposes, or let separately. The basement contains capacious kitchens and offices, the fish, meat, and other larders being lined entirely with white tiles, giving a very clean appearance. The cellars also are large, and apparently prepared for a very large consumption. Beneath this basement there is a sub-basement, containing cellars in connexion with

a tap and offices, which are intended to be let off. The architect is Mr. John Giles: the builders, as well as furnishers, are Messrs. Trollope & Sons, of Parliament-street.

ARCHITECTURE AND THE PARIS EXHIBITION COMMISSION.

SOME discontent is felt, and not unnaturally, in respect of the position of architecture and the Royal Commissioners recently appointed to take charge of English interests and honour in the forthcoming International Exhibition to be held in Paris. When the commission was issued, Professor Donaldson was President of the Institute of Architects, and her Majesty's advisers saw that in placing on the commission "The President of the Institute," they were providing Architecture with a fitting professional representative. Immediately afterwards, however, the Institute thought fit to elect to the office an esteemed and accomplished gentleman, well informed as to architecture, but not *an architect*. Painting is represented in the commission by painters, but at the present time architecture is not represented by an architect. In the eyes of our neighbours, this would seem ridiculous: they would not recognise the authority of an amateur; and some movement should at once be made, either by a memorial from the Institute, or, failing that, from some other body, to add to the Commission a properly-qualified architect of right standing. The President of the Institute would of course remain, his name being in the commission (and we are glad to have it there), but it will be a slur upon the profession, and there will be a weakness in the commission, if the addition we ask for be not made.

FIRES AND DISTRICT SURVEYORS.

ON Tuesday, at a meeting of the City Commissioners of Sewers, the circumstanco of two bodies having lain for five days in the ruins of the Poulterers' Arms Tavern, Leadenhall-market, which was destroyed by fire on the morning of Thursday week, was brought under special consideration. The General Purposes Committee of the commission had been directed to inquire into the circumstances attending the fire, especially as to whose duty it was to report it to the district surveyor or other authorities, and whether any neglect or unnecessary delay had occurred in taking the requisite measures in the case. Yesterday the committee reported that they had carefully investigated the circumstances, and had been attended by Mr. J. Young, the district surveyor, and Mr. Lightfoot, his clerk. Having considered statements, and examined the facts, the committee reported that it was certainly not the duty of the district surveyor in such cases to employ men to dig for the remains of persons supposed to have been buried in the ruins of a fire; but that the ruins in such cases were the property of the owner, or of the assurance company, if assured, who, if there were salvage to claim, would undoubtedly prevent any one but their own servants from so interfering. They were of opinion that the firemen, who, being on the spot, had the earliest knowledge of dangers arising from the condition of ruins, should in all such cases immediately communicate with the district surveyor, that the proper steps might be taken to secure them.

THE ARCHITECTURAL ASSOCIATION.

THE usual meeting of members was held on Friday evening (the 23rd ult.), at the House in Conduit-street.

The chair was occupied by Mr. J. H. Christian, the president of the Association.

Mr. Montagu Davenport, of Lower Belgrave-place, Pimlico, was elected a member of the Association.

Mr. J. D. Mathews, honorary secretary, reported that since the last meeting several members of the Association had paid a visit to Montagu House, Whitehall, built under the direction of Mr. Burn, for the Duke of Buccleuch, and were much gratified on the occasion.

A vote of thanks to Mr. Burn and to Mr. Collings, for their courtesy in the matter, was accorded.

Mr. Dunphy brought under notice a letter from Mr. Mathews, which had appeared in the *Builder*, taking exception to the accuracy of the report of some observations made by him at the last meeting. According to the version in the *Builder*, Mr. Mathews was made to state, that when the Institute announced a lecture to be delivered on a certain day, and no lecture was delivered, it was "very like making fools of them" (the members of the Association). Mr. Mathews contended, that what he did say was, that "under these circumstances men could hardly be expected to come to (?), I might almost say, to be made fools of." This ungrammatical distinction without a substantial difference was pointed out and commented upon.

The Chairman said, he was glad to hear that the visit to Montagu House had been numerously attended, as such visits of inspection to buildings in progress were well calculated to give architectural students a practical knowledge of work. He hoped, too, that the voluntary examination class would direct its attention especially to this subject, so that as many students as possible might go up for examination next year. While upon this topic, he wished to state that the members of the Association who were deputed to meet the sub-committee of the Institute on the subject of the examinations, and especially in reference to the points set forth in the memorial of the Association, had been received in a frank and courteous manner. Every one of the items in the memorial was considered, and five of them were answered without doubt, while others were so thoroughly discussed that he was persuaded the Association had not only no fair ground of complaint against the Institute, but that it had many good friends on the sub-committee. Everything that was urged upon the part of the Association was listened to in a straightforward and conciliatory spirit, and nearly every requirement of the Association was acquiesced in without demur. On the whole, he might say, that the interview was most satisfactory, and the deputation could not arrive at any other conclusion than that every member of the sub-committee of the Institute was a friend of the Association. Under these circumstances he had taken upon himself to thank the Institute on behalf of the Association for the manner in which it had acted in the matter.

Mr. L. W. Ridge observed that, under these circumstances, the least the Association could do would be to show a disposition to meet the Institute by sending up as many candidates as possible for examination next year. He hoped that everything that could be reasonably done in this way would be done.

Mr. C. H. F. Lewes called attention to the necessity of getting up a practical knowledge of work, as it was owing to a deficiency in this respect that many failed on examination. This might perhaps be accounted for by the circumstance that in many offices the learning was more of a theoretical than a practical character.

The Chairman apprehended that this was too often the fault of the students themselves, who ought to avail themselves of every opportunity to inspect whatever buildings might be in progress in their offices in order to obtain that practical information which could not be acquired except upon the spot. He hoped the Association would now bestir itself so as to send up as many candidates as possible next year for examination, for otherwise the Institute might well say, "What is the use of our making concessions if you, on your side, do not avail yourselves of them." Moreover, if gentlemen did not go up, all prospect would be lost of inducing the Institute to make any further concessions that might be desirable.

Mr. Lemon suggested that if students would confine themselves to an attentive inspection of one building from its commencement to its completion, and study each detail of work as it arose, much practical knowledge might be obtained.

The Chairman said he quite agreed in the practical utility of the observation made by Mr. Lemon. He could see nothing derogatory in a student of architecture becoming temporarily a "clerk of the works." There was nothing in it to be ashamed of, and they might depend upon it the solid information to be acquired was well worth two years' application in that character.

Mr. Plumbe advocated the desirability of attending the voluntary examination class, and added that he himself was indebted to it for much valuable information which he might not otherwise have acquired. He quite agreed with the Chairman and other speakers as to the advisability of gentlemen going up for examination next year, and suggested that as the minimum number to insure examination was five, it might not be well for five members of the Association to communicate with each other in order to go up together.

The Chairman next called attention to Mr. Tite's prize for the best design for a railway-station suitable to a small town. As he was himself obliged to travel a good deal by rail, he could speak feelingly on this subject, as his experience led him to know that there were a great many railway-stations very defective in their construction, and very unlike what they ought to be.

Mr. J. D. Mathews called attention to the announcement that the drawings for the prize were to be sent in by the 30th of September, and the essays by the 31st of August next.

Some formal business having been disposed of, including the election of the class of design (of which Mr. E. J. Tarver was chosen president),

Mr. Ridge moved a cordial vote of thanks to Mr J. H. Christian, the president of the Association, on his retirement from office.

Mr. Christian in acknowledging the compliment, stated that his desire had been similar to that which he was sure had animated his predecessor in office, namely, to advance to the best of his ability the interests of the Association. He believed that they were now in an excellent position to make progress, and he hoped they would continue to prosper.

The following gentlemen were then elected office-bearers of the Association for the session 1865-66:—

President—Robert W. Edis.
Vice-President—R. O. Harris.
Committee—J. H. Christian, E. Ferrey, H. L. Florence, F. Judge, J. Lemon, C. H. F. Lewes, Lacy W. Ridge, T. Roger Smith, E. J. Tarver, and J. Webber.
Honorary Treasurer—J. Douglass Mathews.
Honorary Solicitor—Francis Truefitt.
Auditors—G. B. New and C. B. Arding.
Curators and Librarians—F. Judge and L. C. Riddett.
Honorary Secretaries—J. Douglass Mathews and Rowland Plumbe.

Mr. E. J. Tarver subsequently read a paper upon organ building and cases, and after a short discussion the session of 1864-65 was brought to a close.

SURVEYOR TO THE CORDWAINERS' COMPANY.

THE candidates were—Messrs. Cobbett, Clarke Emmerson, Knightley, Matthews, and Harry Oliver. The election took place on the 28th ult., when the voting was mainly for Mr. Clarke and Mr. Oliver. The votes being taken ultimately as between these two, Mr. Clarke was elected.

LEEDS SCHOOL OF MEDICINE.

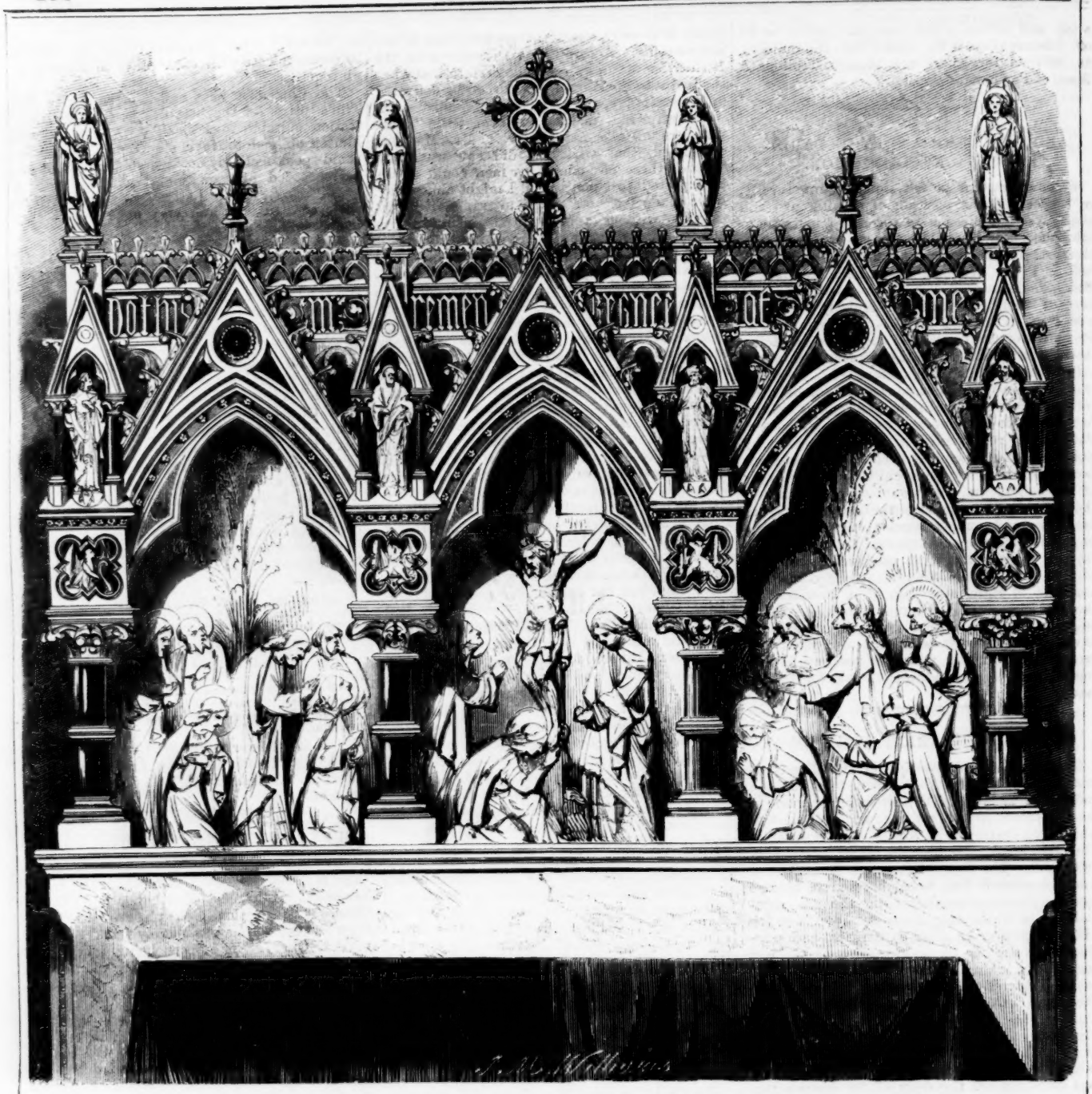
THE contemplated removal of the Leeds General Infirmary to a new site has induced the Council of the Leeds School of Medicine to erect a building near to the new hospital, planned to meet, as far as possible, the requirements of modern medical teaching. The building, plans of which we publish to-day, has been erected from the designs of Mr. George Corson, architect, of Leeds.

The new building comprises a lecture-room; museums of human and comparative anatomy, pathology, and materia medica; laboratories for the use of students and lecturers, furnished with all necessary apparatus for the study of the elements of chemistry, as well as of the more elaborate processes of chemical analysis (a collection of specimens illustrative of mineral and organic chemistry); a library and reading-room; and a complete suite of rooms for the prosecution of practical anatomy.

In the arrangement of the plan the great object aimed at has been to place all the working departments on one level, and to group them round the theatre. Each department will thus have easy access to the platform of that room, but will remain separate and complete in itself.

With this object the theatre is placed in the centre, and occupies both the principal and the upper floor, so that the space necessary for raised semicircular seating may be obtained. At the upper part it communicates with the first-floor by doors, for the admittance of students to the benches. Below, the platform, which is on the level of the principal floor, communicates on one side with the anatomical department, and on the other with the chemical.

The platform is lighted by a horizontal roof light, and is the only part of the room brightly illuminated,—an arrangement by which it is hoped that diagrams, specimens, &c., will be exhibited in the best possible manner.



CARVED REREDOS, SHIREOAKS CHURCH.—MESSRS. HINE & EVANS, ARCHITECTS; MR. T. EARP, SCULPTOR.

The anatomical department will consist of three rooms,—a receiving-room; a lecturer's private dissecting-room; a students' dissecting-room, 40 ft. by 20 ft. In the latter great care has been taken to secure good drainage. An open ventilator runs the whole length of the roof.

The *north* side of the roof is constructed of glass from end to end, and there are two windows in the north wall. A macerating-room, lavatories, &c., are attached to this department.

Adjoining this department is the museum of anatomy, physiology, and pathology, 40 ft. square. This museum is lighted from the roof, and by two windows in the east wall. The windows are so placed as not to interfere with the specimen cases on the floor, and the room is of such a height as to admit of a gallery and second series of cases above.

The chemical department consists of a students' laboratory 25 ft. square, lighted on three sides and from the roof, a private laboratory for the use of the lecturer, and a room for chemical apparatus.

The library floor of the building is appropriated to resident curator's rooms and library.

The library, 40 ft. by 20 ft., is a handsome room with an open timber roof, lighted by three double windows in front and dormers at back.

REFERENCES TO PLANS.

PRINCIPAL FLOOR.

A. Platform of Theatre.
B. Students' Laboratory.
C. Lecturers' Do.
D. Balance-room.
F. Students' Dissecting-room.
G. Private Do.
F. Injecting-room.
K. Museums, Pathological and Physiological.
L. Do. Materia Medica.
M. Council-room.
N. Porters' Living-room.
O. Do. Scullery.
P. Do. Pantry.
Q. Do. Porch.
R. Corridors.
S. Macerating-room.
W. Heating Apparatus, &c.
Z. Stair to Do.
U. Lumber under Theatre Gallery.
X. Stair down from Hall.
T. Water-closets.
Y. Lavatories.

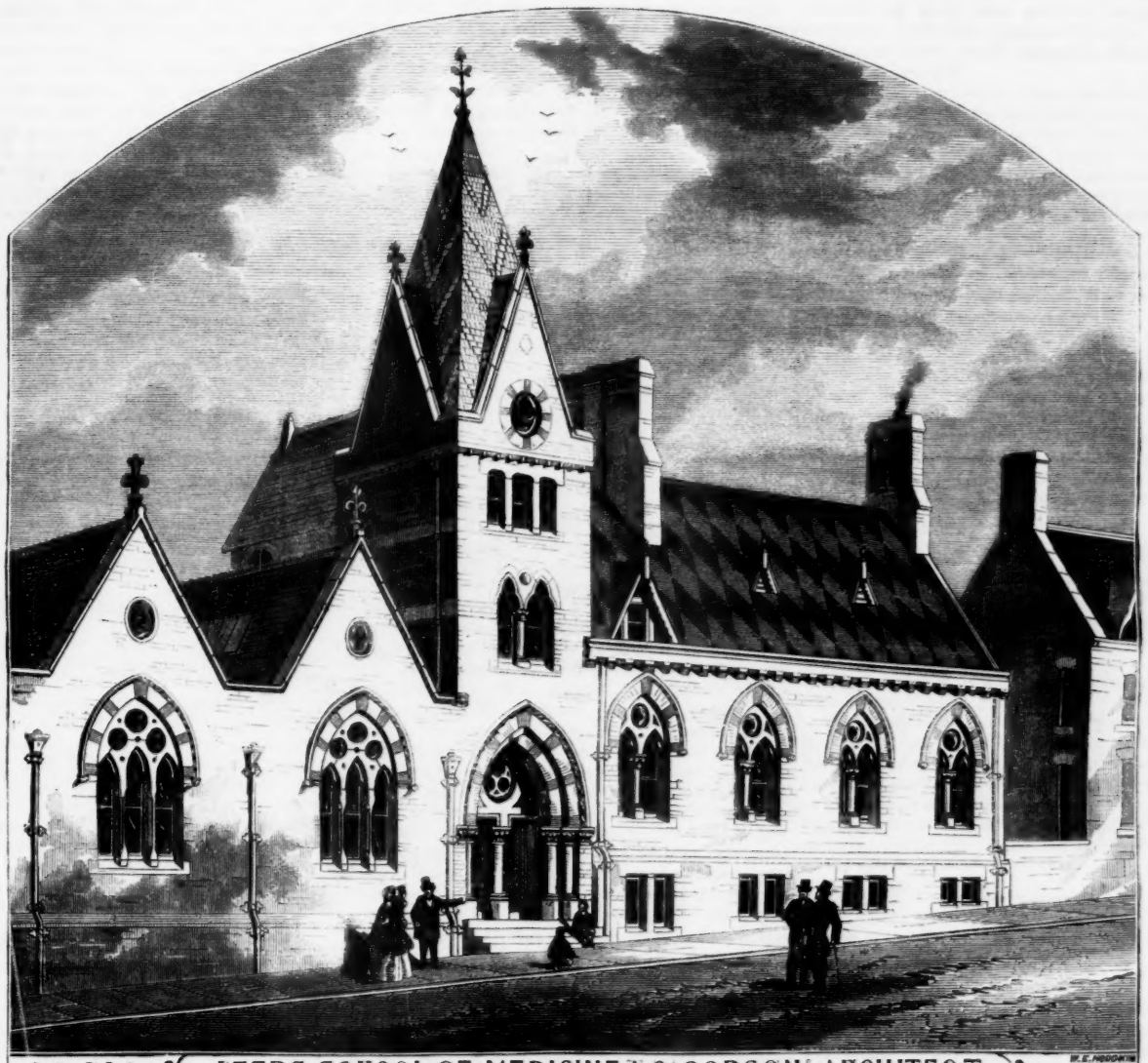
LIBRARY FLOOR.

A. Lecture Theatre.
B. Library.
C. Curator's-room.
D. Entrance Hall.
E. Closet.
R. Corridor.
S. Stair up to Bed-rooms.
W. Stair up from Hall.
V. Stair down to Principal Floor.

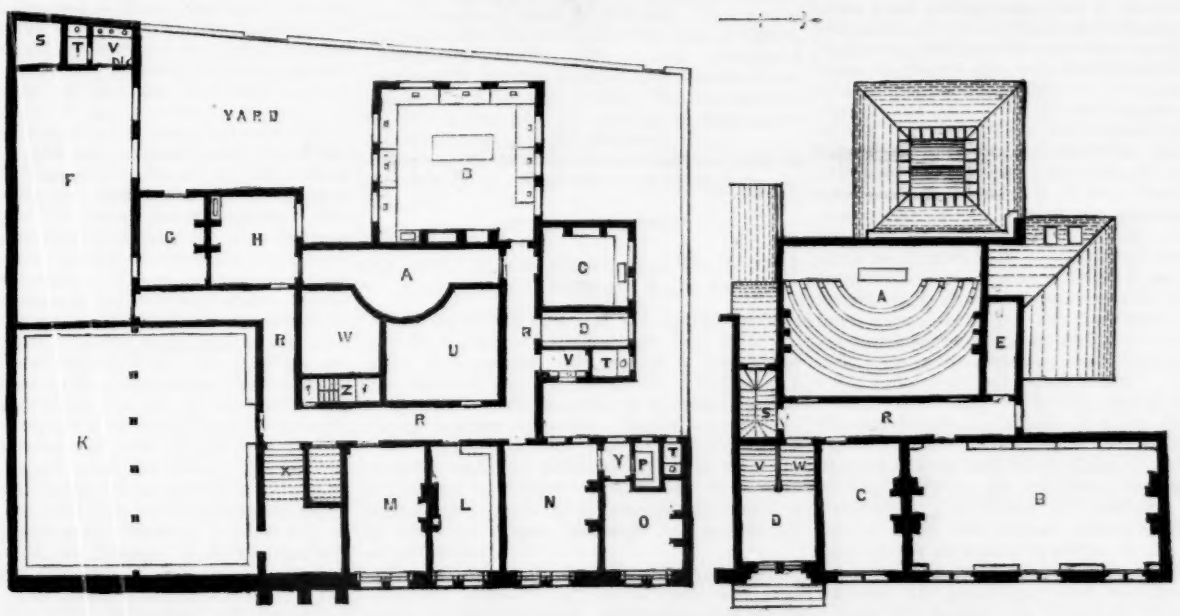
CARVED REREDOS IN SHIREOAKS CHURCH.

OUR engraving represents the reredos which forms part of a memorial, in Shireoaks Church, of the late Duke of Newcastle, comprising credence table, sedilia, and panelling round the apse of the new church lately erected. The reredos itself is executed in alabaster, inlaid with Italian marbles and Derbyshire spar. The sedilia, credence-table, and panelling being also of the same materials.

The reredos is divided into three compartments, surmounted by canopies supported on slender pillars, richly capped. The centre division contains, in *basso relievo*, the Crucifixion of Our Saviour; and the other two show Saints and Martyrs in Adoration. In the niches dividing the subjects are the figures of the four evangelists; and below, in quatrefoils, are their emblems. On the pedestals above these are represented angels, in attitudes of praise and adoration. The spandrels in the canopies are in Derbyshire spar and Italian marble, whilst the canopies of the figures are inlaid with mosaic work. This reredos is nearly completed, and much of it is on its way to its destination. It was designed by Messrs. Hine & Evans, architects; and executed by Mr. T. Earp, sculptor.



G.C. del. LEEDS SCHOOL OF MEDICINE. G. CORSON. ARCHITECT



PLAN OF PRINCIPAL FLOOR

PLAN OF LIBRARY FLOOR

FEET

THE REPAIR OF ST. NICHOLAS'S STEEPLE, NEWCASTLE-UPON-TYNE.

OUR readers will have some recollection of the dispute between the Newcastle corporation and the vestry of St. Nicholas's as to the repair of the steeple; and that there was, as we remarked, some risk of the steeple falling in the midst of the dispute. We are glad to notice, however, that there is now a prospect of the repairs being carried out at all events, although the dispute seems to be as far from being settled as ever. The corporation having offered to head a subscription-list with 500*l.* if the vestry would also subscribe, a vestry meeting has been held, and it has been unanimously resolved,—"That the churchwardens be authorised to subscribe a sum not exceeding 200*l.* out of any funds that may come into their hands, except charitable funds, and the rents of property vested in them and the overseers, in aid of a subscription to be set on foot for the preservation and thorough repair of the tower and steeple of the church of St. Nicholas; provided the corporation of Newcastle will head the subscription list with 500*l.*"

A committee has been appointed, composed of the Vicar of Newcastle, churchwardens, and overseers, with "such members of the corporation as may be by them nominated."

HOLY TRINITY CHURCH, WORCESTER.

THE Church of Holy Trinity, Shrub-hill, Worcester, has been consecrated. The edifice has been built from a design by Mr. W. J. Hopkins, of Worcester, and will accommodate 850 persons, all but 200 free. Mr. Nelson, of Dudley, was the builder. A new quarry, near Hadley, was opened expressly for the stone of which the new church is built: it is a grey and red sandstone mixed. Bath stone is used for the tracery of the windows. The building consists of apsidal chancel, north and south transepts with eastern chapels to each, nave and south aisle; principal entrance at west end, with three other doorways, one at west of south aisle, another west of north transept, and the third at the north-east angle of the chapel in the same transept.

The building stands on an elevation by the side of the new road leading from Lowesmoor to the railway station. It has a steep-pitched roof, with pyramidal bell-cot at the intersection of the roofs. The cot is mounted on ornamental wrought-iron, supporting a shingle roof. Buttresses, with gabled offsets, are fixed between the apse windows, and bands of various coloured stone run beneath the windows.

In the interior, over the nave, are the remnants of the roof of the Guesten Hall, unfortunately destroyed some two or three years ago. Having been curtailed 4 ft. in width, the construction has been much altered and the lateral thrust lessened. The old timbers contrast with the lighter colour of the new boarding rafters. The principals of the nave roof rest on dwarf wood shafts, supported by carved stone corbels—heads of apostles and prophets—the gift of Mr. Bolton, of Worcester. Bands of ornamental coloured stone run round the interior beneath the windows and below the wall plate. The south aisle is separated from the nave by three pointed arches, resting on circular columns with stilted square bases. The arches and piers have alternate courses of red and grey stone. There is no clerestory, for the arches reach nearly to the wall plate. In the north wall of the nave are four Decorated windows, two of which are copies of some in the late Guesten Hall, and the others are original designs by the architects. These windows are some 14 ft. above the ground. Also, in the west wall, is a Pointed rose window at a great height from the floor. This window is an original design by the architect. The rose, or wheel, has radiating mullions terminating in cinquefoils, and in the centre is a triple tau, as an emblem of the Trinity. A double doorway underneath this west window forms the principal entrance. The length of the nave is 98 ft. 6 in.; height of nave, 54 ft. to ridge of roof; breadth of nave, 30 ft. 6 in.; ditto, aisle, 16 ft. 6 in. The length of the chancel is 43 ft.; ditto width, 23 ft. 6 in. Across the transepts, 75 ft. 6 in. Total internal length, 140 ft. 4 in. The style is Decorated. The roofs are of one height, except the wooden vaulted crossing between the transepts, which is slightly lower, having diagonal groining of the same material. The chancel roof is of open timber work, shaped to suit the apsidal end, decorated in polychrome. There are five three-light decorated windows round the apse, and in the east wall is a canopied recess, containing a carving by Bolton, the subject being the "Last Supper." The north transept has two two-light Decorated windows. In the south transept there is a five-light window with Geometric tracery. All the carvings in the chancel were given by the rector, who also presented the corona and one-half the painting of the roof, the other half being done gratuitously by Mr. Wells, the decorator.

The seats are open, of varnished deal. The pulpit stands at the north-west angle of the chancel by the north transept. It was the gift of Messrs. Wood & Son, and was carved by Mr. Bolton, from a design by the architect. The cost of the new building, site, &c., will be something under 7,000*l.*; and 2,000*l.* are wanted for the tower and spire.

IMMANUEL CHURCH, STREATHAM COMMON.

THE old church, erected about ten years since, consisted of a nave and aisle (deeply galleried), a small communion recess, and an octagonal bell-turret. Little now remains of this structure: a new south aisle, with a spacious chancel, a massive tower, an arcaded baptistery at the end of the nave, a north porch and stair-turret, and a lofty canopied drinking-fountain have been added. The thin metal columns and arches internally have given place to an ornamental stone arcade on each side of the nave, the shafts being of red Mansfield stone, with foliated caps. The chancel, built wholly at the expense of Mr. William Leaf, is paved with handsome encaustic tiles, and seated with richly-carved oak stalls. On the north side stands the organ-chamber, containing a large and powerful organ, built by Hill. The pulpit stands at the south side of the chancel arch, and is hexagonal, of Caen stone, supported by marble pillars, and having carved medallions of different design to each of its sides; the lectern and reading-desk being opposite. The baptistery is at the end of the nave, and is lined throughout with red brick, Scriptural texts, formed with glazed tiles, being banded round it at intervals. The font is the gift of Mr. Horsman Coles. Advantage has been taken of the irregular shape of the ground to make this portion architecturally effective, both externally and internally, and the somewhat novel feature of a drinking-fountain (forming part of the principal façade of the church) has been adopted. The tower contains four bells, by Warner (part of a future peal of eight bells), and has a lofty stair-turret at its south-east angle. The large chancel window is about to be filled with painted glass. The two baptistery windows are by Messrs. Lavers & Barraud. The cost of the entire alterations and additions exceed 6,000*l.*, independent of gifts to the church. The architect is Mr. Ferrey, F.S.A.; and Messrs. Dove, Brothers, are the contractors. The brasswork is by Hart & Son, and the carving is executed by Mr. Williamson and Mr. Robinson.

The church was consecrated and re-opened by the Bishop of Winchester, on Saturday, the 17th ult.

ON THE ECONOMY OF WATER-SUPPLY AND UTILIZATION OF RAIN-FALL.

THE continued rains of the spring of 1860 and the drought of 1864 should lead us to inquire whether the conservation of rain-water has received due consideration. An excess of moisture demands attention to drainage: a deficiency requires irrigation. As the necessity for observing these almost reciprocal conditions is variable, and not unfrequently local, it is as imperative to conserve and diffuse the water-supply and rain-fall with discrimination as it is to store the surplus sequence in grain, fodder, or animal food.

Man is the steward of Nature: he must not allow her profusion to run to waste, and then repine at her occasional parsimony, from which he should learn frugality. In fact, prodigality in nature is prophetic of, and provident for, deficiency;—the seven years of plenty provided for the seven years of famine in Egypt during Joseph's government.

As population increases, the demand for pure water becomes more emergent, while a greater volume of water is rendered impure through the admixture of an increased amount of excretions. Even if our rivers and water-courses are redeemed from the condition of open sewers and direct receptacles for excrement and filth of all kinds, they cannot be much improved by the filtration of fluid from pastures irrigated and saturated with the sewage of towns, the solid portion of which would naturally subside on the surface of the soil.

For wholesome water, then, we shall have to refer to the clouds, to mountain tarns, to highland lakes; and there is little doubt but that aqueducts deriving their supply from such sources would prove the most economical mode of distributing water in their progress from a greater to a less altitude, the gravitation of that fluid on a declining gradient being its own conveyance. The adoption of such sources would also insure purity of quality, as no permeation of impure fluids, which does occur to wells, could affect water derived from an altitude.

By a system of interception and collection admitting of diffusion at pleasure, the desiderata of irrigation and drainage may be attained. The natural proclivity of water may be arrested by transverse cuttings. Alternately opposed curvilinear canals will diffuse water throughout a large area, and also aid pneumatic navigation, or vessels propelled by sails. Witness meandering rivers, and the advantages of a "reach" in aiding sailing-vessels to "tack," or "make a board."

If every house-roof was a rain-tank, the contents would contribute something towards the water-demand. Waste-pipes could be fitted to allow the excess from the loftier houses to find its way to the lower ones; and the excess would, after performing some ablutory office, perhaps, reach the sewers. This roof-cistern system would also be auxiliary in case of fire.

Farm-buildings should be so constructed as to save the largest possible quantity of rain-water by means of roof-cisterns or gutters, and troughs for the reception of the surplus from waste-pipes or eaves. There would then be little necessity for man or beast resorting to the liquid drainage concentrated in the "pond," situated, necessarily, at the lowest part of the farm.

THE NATIONAL GALLERY AND ROYAL ACADEMY.

I VENTURED to propose, some few months back, and to submit to the members of the Royal Academy, a plan for a new National Gallery, in which, and connected with it, I ventured to suggest that the Royal Academy should have provided for them rooms for their annual exhibition of pictures, and space for their schools and library. This plan has been thought so well of by individual members of the Academy, that I cannot help asking you for permission to urge it somewhat more publicly now that it has been determined finally by the House of Commons that the Gallery of National Pictures shall not be moved from its present site, and, as a necessary consequence (*at the time*), that the Academy should find a home elsewhere. To me it seems a subject of the first importance and interest, and may help either to further or retard the progress of art in no slight degree; and—which makes me feel especial interest in it—it involves the acceptance or rejection of the principle as to whether or not a museum or gallery of pictures shall be regarded as a *school* and consequent inspiration to those who study in it, or merely a record or storehouse of the works of those who have passed away and left specimens of their art-power for us merely to look at,—*i.e.*, a book, as it were, of the history of fine art and painting. I will be as short as I possibly can.

First, then, I will—if, for the sake of clearness, you will permit it—indicate in a few lines what I have ventured to propose to the council of the Royal Academy, and to the Chief Commissioner of Public Works, for *combining* the two great institutions, the Gallery and Academy. I propose to leave the present gallery as it now is, without any alteration whatever, to do its duty as a receptacle for the whole collection of national oil paintings;—the workhouse and schools of Archbishop Tennison, immediately behind it, to serve, with as little done to them as possible, as space for water-colours, engravings, photographs, &c.;—the two buildings, viz., the chapel and baths, as further space for *sculpture* and *architectural details*; a temporary communication being made in each case between these now separate buildings. The Royal Academy would then occupy temporarily the barrack buildings (for a more inconvenient place for

soldiers and military work cannot be conceived), for the purpose of its annual exhibition, and to be also united to the buildings just named, so that during the Academy Exhibition a clear communication through all these galleries may exist, thus to give the public opportunity for seeing with comfort the real state of modern painting as a progressive art action consequent on the study of the older art. The power of doing this, and the attractiveness of the larger space, would, I feel no doubt, double the number of visitors to the Academy Exhibition. All this would be done at simply the cost of the existing buildings, the existing rooms of them being no more inconvenient than were the old rooms of Somerset House or Montagu House. Thus the Royal Academy would form, as I think it ought, a part of the idea of a national gallery of the fine arts. The first new building for the Royal Academy I suggested should be a circular domed hall, to be built in the centre of the present Barrack-yard; and the first section of the future National Gallery built on the site of the houses immediately adjoining the present gallery, the future gallery forming a square;—a somewhat, I fear, startling and pecuniarily alarming notion; but—and it shows what fine art is worth in the public estimation—it may be borne in mind, as a contrast, that no sooner did the public convenience ask for a way from the Underground Railway to the other side of the river, than no less a sum than *four millions* were found to accomplish the work, while Mr. Cowper is now asking timidly but for twenty *thousand* for a room or two more for pictures that cannot now be seen for the want of space to put them in. Both are alarming, but may fairly claim the merit of indicating as an art thermometer the force and pressure of fine art on the public mind! Artists have but little to boast of in these days.

I must ask pardon for so much explanation, but I could not say what I want without. It is the need there is, as I conceive, for a greater liberty of art action than now anywhere exists, and a change from the present fine-art monopoly, art protection, as it may well be called, to a free-trade action and policy in art. This seems to me the one urgent question of the time, for it is, indeed, to do for art and labour or work what has already been accomplished so magnificently for trade and commerce. Mr. Cobden, to whom society owes so deep a debt, said but a few days—nay, hours—before his death, that what was now needed to be done, was to agitate for a free trade in labour; and I took the liberty of explaining to him, as far as I could, what *art labour* meant and is, and to ask him to consider a subject so entirely new and hitherto unthought of. The political economists seem to have passed it completely by; and yet it really is not until fine art, in some form or other, has touched and moulded the rough and unformed materials that human labour, *as an expression of the powers of the hand and mind*, can be said to have an existence as a final pleasurable result. I ask your attention to this great principle. It requires a little thought, and is worth a little trouble to come at; but is worth having when got; for the labour of the ancient Greek was, as I urged on Mr. Cobden, a fine mental fine-art result *always*, whether in a building or a water-pot, and bore the impress of his time and race, while *our* labour now does neither the one nor the other. The Greek wrote his name on every thing he made: we merely scribble unmeaning marks, or try—always to fail—to copy, by a process of manufacture, the writing of other men as far off as dead. Art has, if we will consider it in these modern days, not yet *begun*, if this idea has any truth or value. How necessary, therefore, it would seem to be to urge the reform of the only institution in England which ever affords specimens and proofs of the genuine art handwriting of its members; and how can the public be asked, through the House of Commons, to do more for their own benefit than by affording it space to work in. Two things are requisite,—*fairness*, on the part of the Academy, and *interest*, on the part of the public.

The Royal Academy is now the narrowest and most *protective* body remaining in this materially great country; but its vocation, as I think, is before all others; but it can only carry out that vocation worthily by exchanging its protective for a free policy, and by making itself worthy of *public* help. I think it should form a part of, and be, in itself, a national institution, and should lead and guide to the creation of a finer and nobler order of labour. It needs, further, only that the public be interested; for monopolies such as the Academy now is,—and it is one of the worst that ever existed, even in Lord Bacon's day,—*can* only be broken down by public opinion and public discussion.

I have ventured to trouble you with these few thoughts, in the hope that some little interest may be excited on the subject of them before the Royal Academy is finally transported to the wretched site to which its own narrowness only has condemned it, or *can* yet condemn it.

C. BRUCE ALLEN.

METROPOLITAN BELLS AND BELFRIES.

APPEAL FOR A NEW PEAL FOR ST. BARTHOLOMEW'S.

THE steeple-keeper of St. Martin's-in-the-Fields, Mr. George Morris, whose sensible and interesting enough though not very literary production, as to metropolitan belfries and bells, we put into shape for the *Builder*, in June, 1864, now writes to thank us for doing so, and to state farther that, having been ringing-steeple-keeper also of St. Bartholomew's the Great, Smithfield, for the last ten years, he has long wished for an alteration in the bells, as the present five bells are very old, and have lost their tone; so he laid the matter before the rector, and Messrs. Jackson & Poole, churchwardens, who have all approved of his proposals, "as the promotor of a new peal of bells;" and Mr. Jackson has agreed to become treasurer, and Mr. Morris himself (No. 5, Long's-court, Leicester-square) will be a collector of subscriptions, which Mr. Jackson (No. 22, Bartholomew's-close, W.C.), will also receive, for the new peal, which will be in memory of Prince Albert. Mr. Morris evidently expects us to add that, "with our friend's great undertaken, we wish him every suxsess, with God spead;" and that we do, although this is not quite the way in which we would have said so.

Mr. Morris expresses his gratification to observe, from the *Builder*, that so many new churches have of late been supplied with new peals of bells, but he very naturally says,—"As so much is beeing done to our new churches, I think our old anchient London church bells ought not to be forgotton which our fourfathers built;" and, as to the state of the metropolitan belfries, he adds:—"My last publication came before the Lord Bishop of London; and, in a letter to me, his lordship's chaplin, of August 2nd, 1864, says:—'Sir, the Lord Bishop of London has made some inquiries as to the matter brought before him in your letter of 8th ult., and hopes that any neglect in keeping the steeples and bells in good order which may exist will be remedied. I am, Sir, yours faithfully,—W. H. FREEMANTLE, Chaplain.'"

UNFAIR DEALING WITH ESTIMATES IN SHEFFIELD.

THE town-council of Sheffield have sanctioned proceedings of their Watch Committee, with respect to the estimates for their new police offices and prison-cells, which one of their own members characterized as "very wrong," and another admitted to be inconsistent with "professional etiquette;" and which we consider to be unfair dealing, not only towards the building tenderers, but towards the ratepayers themselves, whose pecuniary interest the council professed to consult.

An advertisement appeared in the Sheffield newspapers and in the *Builder*, inviting tenders for the new police offices, &c., and the following tenders were accordingly sent to the watch committee:—

Byron	£8,690	0	0
Gomersall	8,675	0	0
Wade	8,570	0	0
Craven, Brothers	8,480	0	0
Neill	6,840	0	0

The Watch Committee accepted the tender of Mr. Neill, it being the lowest; but, after the amounts of the tenders had been advertised, Mr. Neill asserted that he had made an error, and sent in a second tender 727*l.* higher than his first one. The committee at once saw the impropriety and unfairness to the other contractors of such a proceeding, and unanimously resolved to accept the next lowest tender, which was the only fair course they could take. Mr. Neill, however, subsequently had an interview with the committee, who thereupon accepted his second tender, although Mr. Neill said that, rather than lose the contract, he would complete it in a workmanlike and satisfactory manner *for his original tender*. The council have since adopted the procedure of their committee.

The local master builders have publicly complained of this departure from all tradesmanlike custom, and ask the council to re-consider the question, so that an example so pernicious to trade should not have the highest official authority of the town. As they remark, "The custom of the trade is to let every tender stand on its own merits; and, if any contractor is not prepared to accept the work on his tender as sent in, it is considered withdrawn, and the next tender accepted. It is not the first time (they continue) that a contractor has found out a mistake when it has transpired that his tender was considerably lower than that of his competitors. Such a circumstance occurred in Sheffield a few years ago, in connexion with the Brightside Bierlow Cemetery, and the error was found out, as in this case, when the estimates had been published in the *Builder*, and not before. The Burial Board, however, at once set aside the amended tender, and the next lowest tender was accepted." Other cases of a similar kind occurring at Sheffield are quoted, so that the trade practice is as well known there as everywhere else.

A correspondent of a local paper asks, "Who in the first instance accepted Mr. Neil's tender? By what authority was it declined? and, how came it to pass that Messrs. Craven were communicated with? by whose sanction and orders did they commence the work? and, after commencing and continuing upwards of a week, how were they stopped?"

SOCIETY FOR IMPROVING THE CONDITION OF THE LABOURING CLASSES.

THE twenty-first annual meeting of this society was held on Tuesday, at Willis's Rooms, King-street, St. James's; the Earl of Shaftesbury presiding. The object of the society is to improve the dwellings of the labouring classes. In carrying out this, the report states that the society have renovated old houses and erected new buildings. The first scene of their operations was Pentonville, where they have set up model dwellings for the accommodation of 23 families and 30 single women. In Charles-street, Drury-lane, they have three lodging-houses, affording superior accommodation, at low rents, to 82 men. In George-street, Bloomsbury, they have a model lodging-house capable of accommodating 104 men. In Hatton-garden they have also a building for single men. In Streatham-street, Bloomsbury, they have erected a building to accommodate 54 families. In Portpool-lane they have a building for 20 families and 128 single women. To this building a wash-house is attached, and during the year, up to last December, there have been 20,766 washings. Several houses have been renovated by the society in Wild-court, Drury-lane, and 11 houses have been renovated in Clark's-buildings, Broad-street, St. Giles's. In Tyndal's-buildings, also, several houses have been repaired and put into tenantable condition. With regard to the funds, the sum received in the year ending the 31st of December, 1864, from all sources, for the general purposes of the society, was 6,399*l.* 17s. 9½d., which, with the balance in hand at that time (being 294*l.* 10s. 4d.), made a total amount to be accounted for of 6,694*l.* 8s. 1½d. Against this was to be charged for current expenses of all the lodging-houses, including repairs, painting, &c., 3,431*l.* 8s. 2d.; loans repaid and other claims and interest, 2,298*l.* 10s. 2d.; rent of offices, salaries, managers' commission, printing, plans, and other incidentals, 677*l.* 9s. 9d., making a total of outgoings of 6,407*l.* 8s. 1d., and leaving a balance of 287*l.* 0s. 0½d. The real property, &c., of the society (valued at cost) is estimated at 44,561*l.* 9s. 11d., and the general liabilities are set at 21,789*l.* 6s. 5d., leaving assets amounting to 22,772*l.* 3s. 6d.

Various addresses having been made,—

Lord Shaftesbury, in returning thanks for a complimentary vote, said it should never be forgotten that the society was merely a model society, and not one intended to do good on an extensive scale, but rather to show what was possible to be done provided sufficient capital were embarked in the work. In some cases they had built houses, in others they had only renovated old ones; but in every instance their experiment had been successful. It had proved that the people, on being transferred from bad to better dwellings, were improved in morals; and it also established a fact which some persons had questioned, that the people were themselves desirous of living in better dwellings. But

experience had also proved that these better sorts of dwellings could not be built to realize a profit of more than 5 per cent., and as individual builders expected to make at least 10 per cent. on their outlay, it was obvious that no such houses as were contemplated by the society could be built for the use of the working classes, except by a body possessing a large amount of capital. As to bringing the present houses under public inspection, he had made the attempt twice in Parliament, but had hitherto failed; still, it was an object to be constantly kept in mind.

THE OPERATIVE PAINTERS OF LONDON.

THE operative House painters have asked the masters, as we mentioned last week, for an advance of wages to 7d. an hour, on the following grounds:—"1. The high price of animal food; 2. The present increased house-rent; 3. Believing that our labour is as remunerative as other branches of the building trade."

In forwarding to us a copy of their memorial the secretary says,—

"We have been for years in the receipt of less wages than other branches of the building trades, the wages of painters being only 5s. per day, and our employment far more precarious, whilst the pernicious character is well known, seriously affecting in many cases the health of ourselves and families; whilst, in point of intelligence, honesty, and respectability, we are, as a body, second to none. Allow me, sir, to inform you we are acting quite independent of any other branch of the building trade; also that there is not one man upon the committee, or acting with us, who has ever before been concerned, directly or indirectly, in getting up memorials, strikes, or any other agitation likely to destroy the good feeling that should exist between employers and the employed."

A skilled painter should be able to command as much as a skilled bricklayer; but, if every man who can take a pound brush and slobber over a wall or iron railing is to be regarded as a painter entitled to ask for the regulation wages, masters will, of course, refuse to make the advance required, because the supply of such labour is unlimited, and much overpasses the demand.

THE FEMALE SCHOOL OF ART.

THE prizes to the successful pupils of this school have been distributed in the theatre of the Geological Museum, Jermyn-street, by the Right Hon. H. Bruce, M.P., the Vice-president of the Committee of Council on Education. The school has now been established some time, and has been conducted with considerable success. The present number of pupils is 117, as against 80 only at this time last year. At the last competition for local medals at South Kensington the school sent 105 drawings and paintings for the competition, and to the large proportion of twenty-five of them medals were awarded, and three obtained the reward of honourable mention. Of the successful drawings eleven were selected for the national competition, and three of the students were so far successful as to obtain the national medallions. At the Government inspection, on 27th March, when the annual examination for the second grade took place, forty-nine students presented themselves for examination on the four subjects of freehand, geometry, perspective, and model drawing, when twenty-one obtained cards for having passed, and to sixteen prizes were awarded for having, in addition, obtained the mark "excellent" for their papers. The bazaar, in June of last year, at which the Princess of Wales presided, produced 2,412*l.*, a portion of which had been appropriated to the completion of the final purchase of the premises. The principal class-room of the building, now completed, is 47 ft. long by 27 ft. wide, and the building affords ample space for the reception of 200 pupils. Her majesty has promised 10*l.* a year towards the establishment of a Queen's scholarship.

THE WORKMEN'S CLUB AND INSTITUTE UNION.

THAT the objects and plans advocated by this excellent society can be practically worked out with most beneficial results, is now, it seems, amply proved in Croydon, Leeds, Canterbury, Winchester, Newcastle, Hull, York, Rotherham, Bolton, Derby, Brighton, Faringdon, Manchester, Preston, Bristol, Devizes, Shoreditch, Chelsea, Camden Town, Holloway, Southwark, Westminster, Notting-hill, and other places, making a total of about 165 clubs, twenty-eight of which are in the metropolitan districts, and above 100 of which have been formed under the auspices of this union in the course of little more than two years. The applications at the office for advice and information, personally and by letter, average about sixty weekly; and the secretary has attended, by request, upwards of 250 meetings in different parts of the country. Several clubs are now being formed in various localities by the impulse, and under the guidance, of the union. But, if the council are to continue their labours, they must receive largely increased support. They complain of the low condition of their finances. The work has been performed principally by the help of donations: the whole annual income of the union is only about 350*l.*; and the total cost of all its operations during two years and a quarter, including salaries, printing, travelling, public meetings, &c., has only been about 1,700*l.* Yet, with this small amount, in the course of twenty-seven months, it has been mainly instrumental in gathering above 25,000 working men into these clubs, and away from the ruinous public-houses. Sir George Grey has authorised the enrolment of working men's clubs and institutes under the Friendly Societies' Act. An annual subscription of 1*l.*, or a donation of 10*l.*, constitutes the contributor a member of the union.

PRIZES FOR ART-WORKMANSHIP.

ACTING on the invitation of the Society of Arts, the Worshipful Company of Plasterers, London, offer (subject to the general conditions of the Society of Arts), a prize of 10*l.* for the best floriated bracket or truss in the Italian Renaissance style—dimensions, 14 in. on the beam, 12 in. on the wall, and 8 in. on the face—to be designed and modelled by the competitor, or the designer and modeller may co-operate in the production, when 5*l.* will be awarded to each.

Five pounds will be given for the next best model, or 2*l.* 10*s.* each to designer and modeller.

Artisans' apprentices and students may compete for these prizes, but not master tradesmen, Masters in Schools of Art, or those training for Masters in the Central School of the Department of Art.

ANCIENT MORTARS.

THE composition of ancient mortars has been examined by Dr. Wallace, and the results given in the *Chemical News*. The first specimen was from the Great Pyramid, and presented the appearance of a mixture of plaster, of a slight pinkish colour, with gypsum. It did not appear to contain any sand, the place of which was taken by coarsely-ground gypsum. Large quantities of this material and of alabastar are stated, by Professor Smyth, to be found in the vicinity. Analysis showed this mortar to contain 82 per cent. of hydrated sulphate of lime, and 9½ per cent. of carbonate of lime, besides smaller quantities of other bodies. A very ancient mortar, supposed to be the most ancient in existence, was obtained from the ruins of a temple near Larnaca, in Cyprus. The temple is now wholly below the ground, still the mortar was exceedingly hard and firm, and appeared to have been made of a mixture of burnt lime, sharp sand, and gravel. This mortar contained chiefly 26·4 per cent. of lime, 20·2 of carbonic acid, 16·2 of silica, and nearly 29 per cent. of small stones, the lime being almost completely carbonated. Ancient Greek mortars showed somewhat the same composition. Ancient Roman mortars differed, however, being evidently prepared by mixing with burnt lime, not sand, but puzzuolana, or what is commonly, although improperly, called volcanic ash. From his analyses, Dr. Wallace deduces the following conclusions:—That in the course of time the lime in plasters and mortars becomes completely carbonated; that where the mortar is freely exposed to the weather, a certain proportion of alkaline or earthy silica is formed, which probably confers hardness, as those mortars are the hardest which have been long below ground. It is known that those walls are strongest which are built during the rainy season, as then a small proportion of silicate of lime is formed, which not only makes the mortar itself harder, but causes it to unite more firmly with the stone. The mortar which is probably the most ancient is by far the hardest, appearing like concrete. Its excellence seems to indicate that a large-grained sand is best for building purposes; and that even small gravel may, in certain cases, be used with advantage.

TO MAKE STONE IMPERVIOUS.

AT page 437, a correspondent wants to know what will make stone impervious to rain. Having had some forty years' experience in these matters, as to stone, stucco, and cement, I write to say, for his information, that there is nothing better than paint and sand to keep out wet. Give the parts required to be done two good coats of the best white-lead paint, mixed with raw linseed oil (only). After that is dry put on a very thick coat of the colour required to match stone: when the paint is wet dredge it with fine white sand until the surface is thickly covered over.

H. H.

RAVAGES OF PLAGUE IN THE LEVANT.

NOTWITHSTANDING the sad loss of life in Great Britain which might be prevented, we should feel thankful for being preserved from those terrible outbursts of pestilence which once scourged this land, and which in the East still pass like destructive whirlwinds over the country. The accounts of the Russian epidemic are not yet very clear or definite; but news of more certainly fatal results come recently from Medina and Mecca, where the raging of pestilence seems to be terrific. In Mecca the number of deaths has been frightful, and at both places the scourge seems to have taken the form of a combination of fever and cholera, these, in fact, as we are persuaded, being the hot and cold fits of that tremendous ague called the plague. On the eve of the Courban-Beiram and, says the *Levant Herald*, on the first and second days of the feast, the scourge carried off 46,000 victims amongst the pilgrims. The plague has to some extent lessened, but the deaths are still enormous, so that it is likely that the disease has partly declined rather from the want of materials for it to act upon than from the diminution of its violence. Still multitudes continue to perish. The inhabitants have fled, and the streets, on June 7th, were still filled with corpses.

We hope that the angel of death which has passed over this region may have spared some one who has knowledge of sanitary matters and may tell us of the over-crowding, the filthy conditions, and unwholesome food, which, no doubt, brought about this terrible calamity.

To us in Britain, a somewhat more seriously alarming circumstance is the news which has just been announced in *Galignani's Messenger*, that virulent cholera has broken out, and is rapidly on the increase, in Alexandria. The daily deaths in a week rose from 3 to 61. The present summer with ourselves has hitherto been rather a close one: we have had but one rattling thunder-storm over London. The cholera seasons in this country, we have noted, always followed close and oppressive summers. Let us hope to have soon a good thunder-storm or two to clear the air and sweeten the ground.

STATISTICS OF LIFE.

DR. W. FARR, of the General Register-office, has completed his supplementary volume on the mortality of England in the ten years 1851-60, the census of 1851 and of 1861 furnishing the means of comparing the population with the deaths. Some years ago Dr. Granville collected statistics of the history of 400 mothers, married women who applied to the Westminster General Dispensary; and he found that though 272 of them had had only live children, the other 128 had in the previous ten years borne 556 live children and 305 dead embryos, the latter most frequently in their earlier months, just as the mortality in the first year of breathing life increases rapidly as we proceed backwards from the twelfth to the third, second, and first month. In the 26 years 1838-63 there were registered in England the deaths of no less than 2,374,379 infants born alive but not living for a single year! At this present time 100,000 infants of less than a year old die every year in England.

Passing on to the higher ages, we find the rate of mortality declining with every year of life up to 12 or 13, when it is at its lowest. Between 10 and 15 years of age less than five boys in a thousand die in the year. Twenty years later in life the mortality is doubled, and it goes on increasing to the close. At all ages the variation in the rate in different districts is shown to be very striking. The mortality of men in

towns demands a careful investigation. At 45-55 the mortality of London men is not far from double that of men in the healthy districts of the country. It is much higher at every age than the mortality of women in London. Ill-ventilated workshops have something to do with this, and so has indulgence in spirits and other stimulants. The workmen in all large towns suffer as much as the workmen of London, and often more. For instance, at the age of 25-35, and again at the age 35-45, and again at the age 45-55, the workmen of Liverpool, Manchester, Bristol, and Newcastle-upon-Tyne die at a still greater rate than the men of London. In the ten years 1851-60 the deaths in thirty large town-districts of England, with an aggregate mean population of 2,541,630, comprising seven London districts and the principal provincial town districts, averaged 71,194 a year, while the deaths at the rate in healthy country districts would have been only 38,459,—an annual loss of above 32,000 lives in much less than a seventh of the population. If the mortality of all England be arranged in five great groups, the following result appears:—Where the mortality was 14, 15, or 16 per 1,000 persons living, the population was only 86 to the square mile; where the mortality was 17, 18, or 19, the population was 172 to the square mile; where 20, 21, or 22, 255; where 23, 24, or 25, 1,128; and where 26 and upwards, 3,399. Yet there can now be no doubt that mere proximity of dwellings does not *necessarily* involve a high rate of mortality. If an adequate water-supply and sufficient arrangements for ventilation, drainage, and cleansing be secured, the evils which make dense districts so fatal will, to a certainty, be mitigated. It is remarkable that some of the dense districts of cities are already comparatively salubrious.

GAS IN THE CITY OF LONDON.

THE Lord Mayor, at the request of nearly 1,000 City gas consumers, many of them of eminent firms, has convened a public meeting, in the Council Chamber, Guildhall, on Monday, the 3rd of July, at one for two o'clock, to take steps to secure a reduction in the price of gas from 4s. 6d. to 2s. 9d. per 1,000 cubic feet, and to consider the propriety of petitioning Parliament for the repeal of the Metropolis Gas Act, 1860, which deprived the public of the benefits of competition.

The gas movement in the metropolis is also being well supported by the Sewers Commission and the Court of Aldermen; at a recent meeting of the latter of whom, Mr. Haines (chairman of the General Purposes Committee) brought up the report on the several petitions relating to the supply of gas to the City. The Committee generally expressed their opinion in favour of the recommendation and resolutions come to by the Court of Sewers, and of the course which the Commissioners recommend should be taken under the circumstances; and Mr. Haines moved the Court "To agree with the Committee in their report."

Mr. E. Dresser Rogers then moved the following amendment, of which he had given notice:—

"That the report be referred back to the said Committee with instructions to confer with the Law, Parliamentary, and City Courts Committee to consider as to the best method of proceeding, at the earliest possible period, with an application to Parliament for an Act to empower the Corporation either to purchase the existing mains, plant, and works in, or supplying, the City of London; and to contract for the supply of gas into those mains, or to erect works, and enter into the manufacture and distribution of gas to the consumers, as is now so successfully carried on by the Corporation of Manchester and other towns."

Mr. Rogers said he did not intend to insinuate that the Commissioners of Sewers, as well as their officers, had not done their duty in this matter, but his object was to obtain for the citizens what they had a right to demand—namely, a better and cheaper supply of that most necessary article of consumption, gas. There was no necessity to prove the high price or the bad quality of the gas.

Mr. Rudkin, after complimenting the mover of the amendment on his able address, seconded the amendment, which was unanimously carried amidst loud cheers.

Thus at length the Londoners seem to be in earnest in their determination to cast off the incubus which has hitherto paralyzed all their endeavours to carry out a thorough gas reform in the metropolis; to which reform they were first and for long urged by the *Builder*, who often adduced the example of Manchester for their consideration and adoption.

CASES UNDER METROPOLITAN BUILDING ACT.

Roof Coverings.—At Marlborough-street, Mr. John Dabbs, builder, of Hackney-wick, was summoned before Mr. Mansfield by Mr. Jennings, district surveyor of South Marylebone, for omitting to cover the roof, flat, gutters, and lantern-light of a building situated in Black Horse-yard, Rathbone-place, with slates, tiles, metal, or other incombustible material, and to render fire-proof the flues, and to carry up the chimney in brick or stone work to the height provided by the Building Act.

Mr. Hooper appeared for the defendant.

Mr. Jennings said he surveyed the work in Black Horse-yard during its progress, and he found that the roof was being covered with what he had no doubt was asphalte. The Seyssel Asphalte Company admitted that more than 10 per cent. of the composition was tar. He had tried if asphalte would burn, and he found that it was combustible. He could not say at what temperature the asphalte with which the roof was covered would melt.

Mr. Mansfield remarked that it was not the question of melting, but of igniting, that was to be decided.

The surveyor said the roof of this building was composed of wooden joists, and then filled in with concrete, which was afterwards covered with asphalte. Other buildings with asphalte on the roofs had been allowed by him; but in most of them they were first covered with tiles, and the asphalte only added to keep out the wet. In the present case he thought there was absolute risk; the roof had wooden and not iron rafters, and was, therefore, not incombustible.

Mr. Dabbs stated that he had been extensively engaged in building. When zinc or lead was used, the roof was combustible. In the present instance concrete and Portland cement were used, and above them asphalte with sand and silicate. There was originally only 10 per cent. of combustible matter in the asphalte, but, by the addition of sand and silicate, the per-centage was considerably reduced. Lead would melt at a lower temperature than the asphalte used for roofing.

Mr. Mansfield would not pretend to say whether asphalte roofs were combustible or not; and, from the evidence, the fact remained in a very uncertain state. Nothing had been shown before him to prove that asphalte roofs were combustible. If materials less combustible than those named in the Act were put upon a roof, he could not bring himself to say that the roof was so constructed as to be an infringement of the Act. He should refuse to make an order on that point, as the matter was so uncertain; but, with respect to the other two points, he should make an order against the defendant, with a specified amount of costs.

COMPENSATION CASES.

THE HOLBORN VALLEY.

AT the Sheriffs' Court, Red Lion-square, the first case for compensation for property in Middlesex required for Holborn-valley Improvements, "Darke, Committee of Henry Bryan, a lunatic, and Mauran, trustees of W. B. Blackwell, *v.* The Corporation of London," was heard last week, before Mr. Under-Sheriff Burchell, and a special jury, where a claim was made for nearly 25,000*l.* for thirteen houses in Ely-place, required for the formation of the new street from the corner of Hatton-garden to the Farringdon station, in a slanting direction.

The case was opened by Mr. Bovill.—Ely-place belonged to the two parties before the court, each taking a moiety. It was once a fashionable lounge, and noted for its strawberry beds: it was then considered "out of town," and resorted to by the grandees of the City. Subsequently it became the residence of the Bishop of Ely. Latterly solicitors resided there, and it became extra-parochial. Solicitors were giving way to wholesale silversmiths and watch manufacturers, and now a portion was required for the City improvements.

Several witnesses were called to substantiate claim to nearly 25,000*l.*

Mr. Fuller, surveyor, put 3,000*l.* for the depreciation of the houses left after the others were removed.

Mr. Hawkins ridiculed the idea that the improvements could depreciate the property left, but, on the contrary, they would increase the value. All property in the City and contiguous thereto had increased in value, and Ely-place and the neighbourhood would be greatly improved when the contemplated alterations were carried out.

The case occupied several hours, and eventually the parties agreed to a verdict for 18,000*l.*, each party taking 9,000*l.*

Bartrum & Co. v. The Corporation of London.—The Holborn Viaduct.—This was a compensation claim of nearly 40,000*l.*, made by Messrs. Bartrum, Harvey, & Co. woollen warehousemen on Holborn-hill, for their premises and the loss on their trade. The claim was 7,000*l.* for the leashold premises, and 32,000*l.* on account of their business. The premises were required for the Holborn Valley Improvements.

The case, which occupied the Court until a late hour, disclosed some remarkable features. In 1832, Messrs. Bartrum and Harvey were assistants to Mr. Bardwell, who carried on the business; and in 1837 they became partners. The business had since greatly increased. In 1845 the takings were 53,382*l.*, and last year they had reached 158,404*l.* The stock was worth 30,000*l.* New premises had been taken in Gresham-street, at a cost of 18,000*l.*; a premium of 15,000*l.* was paid for the premises. Several witnesses were called in support of the claim, which was placed before the jury at 39,964*l.*

Mr. Lloyd claimed a liberal compensation for the loss of Messrs. Bartrum & Harvey. The public would gain by the contemplated improvements, and there should be no loss sustained.

Mr. Hawkins addressed the jury to "cut down" the compensation. He called no witnesses on the part of the City.

The Recorder placed the case before the jury, and said the evidence showed that the claimants had made a profit of more than 9,500*l.* a year.

The jury retired, and, after consulting one hour, assessed the compensation at 28,000*l.*

The Crown Assurance Company.—A claim was made in the case of the Crown Assurance Company *v.* The London, Chatham, and Dover Railway, for premises in New Bridge-street. New premises were being built in Fleet-street, near St. Dunstan's Church. After a long investigation, a verdict of 10,500*l.* was agreed upon.

PROVINCIAL NEWS.

Leicester.—Among the many private and public edifices lately built in this improving town, and various others now in contemplation, is a new warehouse and factory now being erected for Messrs. N. Corah & Sons. The building, which is of Classic design, will be four stories high, on a Derbyshire stone basement, the face of the walls being of small red bricks, with stone architraves round the windows, quoins to the angles, and a cantilever stone cornice, the whole surmounted by a colossal figure of "Commerce" in Box Bath stone. The factory and engine-house will, in architectural character, correspond. The engine chimney, 16 ft. square at the base, will be broached from a rectangle to an octagon; and, when carried up to a height of 124 ft., will finish with an ornamental stone cap of about 20 tons in weight. The engine bed, which is to be of red Mansfield stone, will contain upwards of 3,000 cubic ft. The whole of the buildings, including recreation-grounds for the work-people, will occupy a space of four acres. Mr. W. Jackson, of Leicester, is the architect; Mr. W. F. Mowbray, formerly of Salt Aire, near Bradford, is the engineer; Mr. H. T. Porter is the stonemason and bricklayer for the factory and engine-house; and Messrs. Osborne, Brothers, are the stonemasons and bricklayers for the warehouse. The present warehouse of the Messrs. Corah, in Granby-street, it is understood, has been purchased by the Government for the purpose of converting it into a post-office, the present post-office being far too small and inconvenient for the rapidly-increasing trade and population of the town.

CHURCH-BUILDING NEWS.

Bournemouth. — The first stone of a chapel at the side of the Sanatorium has been laid. by Mr. C. W. Packe, M.P. Mr. Street, of London, is the architect of the building, which, in its style, will much resemble St. Peter's church, Bournemouth; and Mr. J. W. K. Nethercoate is the builder. The chapel will be 52 ft. in length, by 17 ft. 6 in. in width (12 ft. being taken up for the altar), and it will be capable of seating 100 persons. The flooring will be of oak, and along the centre aisle will be laid encaustic tiles. The pews will be of modern construction each seat being capable of holding four persons, and the windows will be seven in number. There will be a bell turret. The bell, altar, gasfittings, and encaustic tiles, are not included in the estimate of 1,000*l.* The slate for the roof will be worked in pattern, and the building will be erected with the Swanage stone, except the corners, which will be of Bath

stone. It is intended to heat the building by means of hot-water, and to erect a covered passage of glass connecting it with the Sanatorium. In consequence of the limited space of ground at disposal, the chapel will necessarily be built north and south, instead of east and west, as usual.

Rochester. — The cemetery for the united parishes of St. Margaret and St. Peter, together with its chapels, tower, board-room, &c., have been completed, and consecrated. The buildings consist of two large chapels, one for Episcopalians and the other for Nonconformists. These are connected by a couple of light arcades, which give access to the chapels, whilst in the centre stands a tower surmounted by a spire, the whole rising to a height of about 100 ft. The design of the group of buildings is in the Early English style, by Mr. Bulmer, architect. The whole is constructed of Kentish rag, with freestone dressings. The contractor for the erection of the tower, chapels, &c., was Mr. S. Jennings, and the amount of the contract, 3,770*l.* The cemetery occupies a space of six acres of ground, the land having been purchased of the bridge-wardens for the sum of 1,080*l.*

Ogbourne St. George.—The restoration of the parish church of Ogbourne St. George having been effected, the re-opening for public worship has taken place. The edifice has been restored and beautified, at a cost of 1,300*l.*, by Messrs. Marquis & Munro, of Bristol, under the superintendence of Mr. W. E. Baverstock; architect, Mr. Wyatt. Of this sum 1,100*l.* have been raised by rate and voluntary contributions, leaving a debt of about 200*l.*

Aust (*Gloucestershire*).—The Rev. J. H. Way, vicar of Henbury, of which parish Aust is a chapelry, publishes in the *Guardian* an appeal on behalf of the proposed restoration of the ancient church of Aust. The sum of 1,200*l.* is required to effect the restoration in a manner becoming the honoured memory of Wycliffe. Of this amount 1,000*l.* have been raised.

Wells.—A new bell has been hoisted to the roof of the central tower of the cathedral. A petition has been signed and presented to the dean and chapter of Wells, praying that the bell may be hung in the centre of the tower, instead of in the corner, where the old one was surrounded by masonry so as to encompass the sound. The bell, we understand, weighs 18 cwt., and the tone is E flat.

Eyam (*Derbyshire*).—It is rather strangely proposed to restore the parish church of Eyam, "as a memorial of the removal of the plague from that village in 1666." The restoration is also to commemorate, after the lapse of precisely 200 years, the virtues and labours of the Rev. Mr. Mompesson, the then rector of the parish. Have there been none worth commemorating since then? The inference is not very complimentary.

Oldham (*Lancashire*).—The foundation-stone of a new school-church at Oldham has been laid. The building will stand as directly east and west as the irregular nature of the ground will allow, and will consist of a nave 53 ft. by 35 ft., and a chancel 9 ft. by 15 ft., semi-octagonal in form, which will be used for school purposes during the week and for divine service on Sundays. The whole of the seating, &c., will be moveable. In the basement will be a room 26 ft. by 25 ft., which will be used as vestry, class-room, tea-room, and for general purposes. Adjoining this are the heating-chamber, 9 ft. 9 in. by 8 ft., and boiler-room, 15 ft. 6 in. by 8 ft. The height of the basement will be about 9 ft. The porch floor stands 8 ft. above the Middleton-road, and is approached by steps and an asphalted slope running along the north wall of the building, and inclosed by iron palisading. The style is Early Gothic. The walls will be built of Platt's red bricks, and the arches, bands, and patterns will be of black bricks. The walls internally will be faced with picked bricks, and whitewashed: patterns in bricks slightly projecting will be left red. The chancel arch will be formed of moulded bricks. The church will accommodate about 300 persons. The total height from the floor of the basement to the top of the ornamental bell-turret, which saddles the main roof at the west end, will be about 60 ft. The slates of the roof will be of two colours, green and blue, laid in broad bands. The cost of the building will be about 1,000*l.* Mr. W. Dawes, of Manchester, is the architect; and Mr. Wrigley, of Oldham, is the contractor.

Swinton (*Yorkshire*).—A school-church is being built in the Old-lane, Swinton. The foundation-stone has been laid. The building is designed to seat a congregation of nearly 300. It is being built of brick in two colours, and covered with a steep-pitched slated roof. At the eastern end a quasi-chancel is screened off, rising by four steps to the altar, above which in the east wall is a three-light traceried window. Over the arched principal, which marks off internally the chancel from the nave, there will rise from the roof an open belfry for two bells covered with a four-sided spirelet. The contract has been taken at 514*l.* by Mr. J. Grundy, of Pendleton, who works under the direction of the architect, Mr. J. M. Taylor, of Manchester.

Carlisle. — St. Stephen's Church, erected at the sole cost of Miss Burdett Coutts, has been opened and consecrated. According to the designs at first submitted, the cost of the building would have been some 4,000*l.*; but additions and improvements have suggested themselves, and under the hands of the donor the work has increased in cost. Embellishments have been made, a peal of bells has been added, and the total cost will not be less than 6,000*l.* The foundation-stone was laid in March, last year, by Miss Coutts, as noted by us at the time. Red sandstone is the principal material used, the stones being rock-faced and laid in thin courses; while the quoins and traceries are of white Prudham stone. The general style is Geometric. The entire length of the building is 110 ft., and its breadth, including the two wings, is 62 ft. The height from the ground to the ridge is 48 ft.; the height to the top of the wings being 24 ft.; and above these runs a clerestory. A chief feature is the square tower at the James-street end, from the top of which an octagonal spire rises, terminating in a gilt cross. At each corner of the square tower there is a buttress, that at one corner containing the staircase to the belfry. The tower is finished by a cornice 2 ft. deep, from which the spire is broached in a distance of a few feet, and then gradually tapered, its apex being 130 ft. from the ground. There are two two-light windows on each side of the tower, and a single-light window filled with tracery on four sides of the spire, projecting from the spire about 2 ft. at the top, coped with white, and finished in a finial. On the east side of the tower there is a door into the bell-ringers' room. All the windows in the church are ornamented with label mouldings in white Prudham stone, ending some in carved heads, and others in foliage. Additional effect is obtained by introducing, above these white stone carved arches, a relieving arch of alternate red and white. All the carving has been done by Mr. Edwin Stirling, of Liverpool, from drawings furnished by the architect. Mr. Scott, of Newcastle-upon-Tyne, was the sole contractor, but sublet the joiner's work to Messrs. Lowry, of Newcastle-upon-Tyne; the painter's and glazier's work to Mr. Gibson, also of Newcastle; the plumber's work to Mrs. Thompson, of Carlisle; and the plasterer's work to Messrs. Johnston, Brothers, of Carlisle. The clerk of the works was Mr. Beckett, of Liverpool. Mr. James Nelson, jun., of Carlisle, was the architect.

Cockermouth (*Cumberland*). — Christ Church, Cockermouth, has been consecrated by the Bishop of Carlisle. The church has been erected mainly by the means, and entirely through the exertions, of the Rev. Herbert Puxley, now incumbent of All Saints', Cockermouth, and some circumstances connected with the undertaking give it more than local interest. During the five years that he held the appointment of curate to the late Rev. E. Fawcett, of All Saints', Mr. Puxley laboured among the parishioners in a manner which met with their approbation; and, feeling convinced a necessity existed for a new church for the working classes, he set about collecting subscriptions among his friends for the erection of one. He met with much success, the interest the reverend gentleman had manifested in the schools and the charities in his district having made him very popular, and the building of Christ Church was commenced. There was a general understanding amongst the parishioners and many of the principal subscribers that Mr. Puxley was to be the first incumbent. Eventually, however, a stranger in the district, the Rev. W. Williams, was appointed to the incumbency. The ratepayers and inhabitants held an "indignation meeting," and it was resolved that a testimonial should be presented to Mr. Puxley; who, instead of ceasing to take an interest in the work, however, completed the church, at a cost of 900*l.* out of his own resources. Meanwhile, the incumbency of All Saints' fell vacant by the death of Mr. Fawcett, and to that Mr. Puxley was appointed by Lord Lonsdale. The edifice is built from plans executed by Mr. Bruce, of Whitehaven, architect, the contractors being Messrs. Hepworth & Cape. The style is a mixture of the Gothic and Early English, and the construction is of white freestone from Tallentire quarries. The interior is simply arranged, the galleries, sittings, pulpit, and reading-desk being stained pine, which are relieved by blue and gold pillars supporting the gallery. The church is constructed to seat 900, two-thirds free.

DISSENTING CHURCH-BUILDING NEWS.

Castleford (*Yorkshire*).—The foundation stone of a new chapel for the Primitive Methodists in the rising town of Castleford has been laid. The building will stand upon a plot of land in the centre of the town, and, when completed, will afford accommodation for about 550 persons, at a cost of about 1,000*l.*, inclusive of school and class-rooms attached. It will be erected from the designs of Mr. H. Fippard, of York, architect, under whose direction the work will be executed.

Middlesbro'.—The new Presbyterian Church has been opened. The church, which is in the Early English style of architecture, and has cost 1,700*l.*, is the design of Mr. W. H. Blessley, of Middlesbro'. It is 53 ft. by 42 ft., and will accommodate 700 persons. Behind it there is a school-room, play-ground, and a master's house.

Ryhope (*Sunderland*). — The new Wesleyan Chapel at Ryhope has been opened. It is situated near the Colliery Schools, and was built by Mr. Myers, from a design by Mr. J. Tillman, the site and a quantity of stone, lime, and other materials being supplied by the owners of the colliery. The building is fitted out with open benches, and will seat about 200 people; while a small vestry is attached for ministerial use, the whole having a gravelled front and white brick dressings. The entire cost incurred is about 340*l.*

Sunningdale.—The memorial stone of a new Congregational church has been laid at Sunningdale, by Mr. J. R. Mills, M.P. The design is Early Decorated. The turret at the angle is 56 ft. from the ground to the top of the finial. The building will be 25 ft. 6 in. wide, and 74 ft. 10 in. long, internally, exclusive of two transepts, each 15 ft. 10 in. by 6 ft. 8 in., and an apse at the end, 13 ft. by 6 ft. 6 in. The materials of construction are brick, with Bath stone dressings. The accommodation is for about 240 persons on the ground-floor. The ceiling of the church will be below the roof line, and will be divided into panels. All the internal woodwork and fittings will be stained and varnished. The contract is being carried out by Mr. Oades, of Egham, at the sum of 1,016*l.* Mr. W. F. Poulton, of Reading, is the architect. The total cost will probably be about 1,200*l.*, towards which 800*l.* have already been promised.

Derby.—The Baptist Chapel, St. Mary's Gate, Derby, has been re-opened, after having been repaired, cleaned, and ventilated. The ventilation has been fixed by Mr. Watson, of Halifax. The heating apparatus has been planned and fixed by Mr. William Abell, of Derby. The woodwork alterations have been executed by Mr. Dusautoy; the gas-fittings relacquered and fixed by Mr. Longdon; and the painting and decoration by Mr. Basford, all of Derby. The ceiling has been divided into panels; the flats being white with a French grey border and an ornamental line of vermillion. The rafters are coloured buff, with a mauve ornament on each side. At each angle are gold bosses.

Birmingham. — The new Wesleyan Chapel, which has for some time past been in course of erection at Aston Villa, Lozells, has been opened for Divine service. The new chapel, which has been erected from designs by Mr. J. G. Bland, of Birmingham, will cost 4,000*l.*, of which about 3,000*l.* have been raised. It is of the Gothic style of architecture, after the order common in France about the thirteenth century, modified to suit the materials used, viz., red and blue brick, finished with Bath stone dressings. The building consists of a nave of five bays, and north and south aisles. At the eastern end of the interior is a chancel, of shallow depth, opening into the nave, with a lofty arch of brickwork and incised stone. At the north angle of the chancel is the vestry, with a chamber over i opening into the north gallery. The galleries extend the whole length and breadth of the aisles, and are supported with iron columns with floriated capitals. The roof is high and open,

and contains provision for ventilation. The pews, which are without doors, are constructed of deal, stained and varnished, and afford sitting accommodation for 1,100 persons. The western end of the chapel is lighted by two windows of two lights and cusped arch, over which is a St. Katherine's window. All of these are filled in with stained glass, the workmanship of Messrs. Heaton, Butler, & Bayne. All the other windows are glazed with toned glass in pattern. The western end, facing George-street, is the only part completely exposed to view, and shows a gable rising to a height of 70 ft. To the north of the gable stand the tower and spire, rising 130 ft. high, and dividing the new chapel from the old, which is in future to be used as a school-room in connexion with the new chapel. The works have been carried out by Mr. Partridge, builder. The heating apparatus has been executed by Mr. Taylor, the staining by Mr. Naughtin, and the carving by Mr. Allen.

Dudley. — The Methodist New Connexion Chapel, after being some months closed for extension and alteration, has been re-opened. By the alterations the chapel is extended 24 ft. in length, and two side wings are added, the chapel thus being considerably widened, and a separate entrance to the galleries obtained, together with additional lobby room. The chapel is now 80 ft. long and 46 ft. wide. The windows are fitted with modern casements, and Mr. Millward has, at his own expense, fitted each of the thirty with a double row of stained glass. By night the chapel is lighted from the roof by a starlight pendant of 132 jets, manufactured by Messrs. Winfield & Co., of Birmingham; and under the galleries are nine smaller pendants, corresponding with the larger ones. The organ has been enlarged and improved by Messrs. Helmshaw & Sons, of Birmingham. The architect employed was Mr. E. Marsh; the builder, Mr. Millward; and the decorator, Mr. Wyther.

Swindon.—A new Independent chapel is to be erected at the top of Victoria-street, Swindon. The foundations are being prepared. The chapel will be in the Lombardic style, with a square tower at the south corner. It will be built of Swindon stone, with Bath stone dressings. At the entrance there will be Pennant stone columns, with carved free stone caps. The roof will be covered with patent tiles, made to a special pattern. There will be no gallery inside. The seats will be open. The edifice will be constructed to accommodate 500 persons, and will cost about 2,000*l.* Mr. John Phillips is the contractor for the erection of the building, Mr. Pontin, of Warminster, carrying out the masons' work. Mr. Stent, of Warminster, who prepared the plans, will superintend the works. This, with the Corn Exchange, which is progressing, will cause a considerable number of men to be employed in the town.

STAINED GLASS.

St. Margaret's Church, Lynn.—In the east end of the chancel of this church, remarks the *Norfolk Chronicle*, is a window of doubtful antiquity and peculiar form, its principal feature being a large circular opening with what may be called inverted open spandrels beneath, forming altogether a round-headed arch, though at first sight the idea is suggested of a hoop standing on a flat base. The hoop itself is filled in with a poor kind of Perpendicular tracery, devoid of taste, and suggestive of the "Churchwarden's Gothic" period of architecture. The poverty of this window has now been somewhat mitigated by the insertion of painted glass, by Messrs. Ward & Hughes, of London. The new window is the gift of Capt. S. G. Cresswell, R.N., and is a memorial of his late father, Mr. Francis Cresswell. Each of the numerous lights contains a figure, the three central ones being those of the Saviour, the Virgin Mary, and St. Margaret; and the others attendant angels.

St. John's Church, Eton.—The erection of a new east window in St. John's Church, Eton, has now been completed. The general treatment adopted by the artist is founded on that of fourteenth century work. There are eight main subjects in the window, each inclosed within a flowing stem, fruit, and foliage of "the vine," after the example of the ancient "Jesse" windows, the foliage being all relieved upon a groundwork of grisaille glass, introduced for the purpose of giving breadth of effect to the whole as a composition. At the base of the window the groups have reference exclusively to our Lord's Passion. They consist of the procession to Calvary, with Christ bearing the cross, the weeping women following; the Crucifixion; the descent from the cross; and the dead body of our Lord borne to the sepulchre. Above these lower groups, and on a greatly increased scale of size of figures, are three subjects, in harmony with each other, of our Saviour's appearance after His resurrection, each subject occupying the greater portion of two lights. First, our Lord's appearance to St. Mary Magdalene ("Touch me not," &c.) Second, the appearance of the Holy Women returning from the sepulchre. The third and next prominent group, occupying the centre lights, is the Saviour's appearance to St. John (to whom the church is dedicated), St. Peter, and the other disciples at the Sea of Tiberias. The whole of the figures in these three subjects are nearly the size of life. The tracery in the upper portion of the window consists of a series of openings, and they have been made available for the treatment of one subject, that is, "The Resurrection of the Dead, blessed in the Lord." In the top opening, our Redeemer is represented glorified in heaven, inclosed in an auriole of light, with outstretched arms; all the other openings containing figures of "The Just made perfect," ascending and borne by angels. The entire window is the design and work of the Messrs. O'Connor, of London. The insertion of the stained glass was done by Mr. Harrison, the surveyor to Eton College. The window, which has been erected by general subscription, at a cost of nearly 500*l.*, is intended as a memorial of the many benefactors of the parish of Eton, and particularly his Royal Highness the late Prince Consort, who laid the foundation-stone of the church, and who contributed in so many ways to the welfare of the poor of Eton. The inscription, not yet inserted, will run thus:—"The pious memory of his Royal Highness the Prince Consort, the founder of this church, and of the Benefactors of this Parish."

Gloucester Cathedral.—The window memorial of Dr. Jenner in this cathedral has now been completed by the artists, Messrs. Clayton & Bell. The window, remarks the local *Chronicle*, consists of five lights, in each of which are represented three of the miracles of healing performed by our Lord, the centre and chief representation being that of the Raising of Lazarus. The five lower subjects, from left to right, are, Healing the Blind, Healing the Woman with the Issue of Blood, Curing the Deaf, Healing the Man Sick of the Palsy, and the Impotent Man at the Pool of Bethesda. In the second tier, the objects are, the Raising of Jairus's Daughter, of the Son of the Widow of Nain, and of Lazarus, Healing the Centurion's Servant, and Cure of the Deaf. In the upper row are, Healing the Lunatic in the Tombs, the Leper, the Dumb, and the Lame. In the tracery lights are angels bearing crowns, and scrolls with "Alleluia." The memorial of the late Mr. J. Elliott will also be forthwith erected. The window selected is the westernmost of the south aisle. The whole of the windows at the west end of the cathedral will then have been filled with painted glass. The windows in the south and west walks of the cloisters, which have been for many years bricked and plastered up, are to be opened. Three of the windows in the south walk have been filled with enriched glass. A gentleman of the city has proposed to fill two of these windows yearly until all are restored.

Blockley Church (*Worcestershire*).—In Blockley Church, near Moreton-in-Marsh, a five-light stained glass memorial east window has been completed. The glass has been designed and executed by Mr. Holland, of Warwick. It contains, in medallions, the Nativity, Baptism, Crucifixion, Resurrection, and Ascension of our Lord; the Charge to Peter and Conversion of St. Paul being introduced in the outside openings, Peter and Paul being the patron saints. The background is of the vine and passion-flower pattern. There are also small medallion heads of the twelve apostles, emblems, &c. &c. The tracery contains Gothic ornament, emblems, I.H.S., &c. The window was erected by Sir Charles Rushout, bart., and his children, as a memorial of the Hon. Mrs. Grieve.

Cofton Church, near Birmingham.—A stained-glass memorial window has been placed in this church by Mr. J. S. Stock, as a memorial of his two children. It contains three openings filled with the one subject of Christ Blessing Little Children, under a floriated canopy, in which are introduced the Lamb and Pelican, angels in tracery, bearing scrolls, &c. The work was executed by Mr. Holland, of Warwick.

SCHOOL-BUILDING NEWS.

Southminster (*Chelmsford*).—The Southminster New National Schools have been opened. These schools have recently been erected at a cost of 1,500*l.*, the greater part of which has already been raised by subscriptions in the parish, assisted by the Corporation of the Charterhouse. The new building has been erected from designs by Mr. G. E. Pritchett, the builder being Mr. Stammers, of Southminster, and the bricklayer Mr. Cook, of the same place. The building is of the late period of English architecture, with open roof, the main room being 65 ft. by 20 ft., with a class-room of similar width, forming, as it were, a continuation of the school, with a raised platform for class purposes. There are two separate lobbies, with distinct yards, in the rear, with a dwelling-house for the master.

Finchingfield.—The new school and lecture room in connexion with the Independent chapel, at Finchingfield, have been opened. The building is on the east side of the chapel, and is of red brick, in the mixed Gothic and Byzantine style, with black facings and stone dressings. The area of the main room is 45 ft. by 25 ft., the height being 13 ft. to the plate, and 14 ft. more to the ridge, having an open trussed roof stained as oak, with perforated quatrefoil ventilators; the windows, quarry glass, of Hartley's patent. The entrance from the front is by a Gothic porch, paved with Minton's encaustic tiles. The south end of the ridge of the roof is terminated by a finial. There is at the north end of the building a class-room, 18 ft. by 12 ft., and a small cloak-room.

Elmswell (*Suffolk*).—The first stone of new national schools has been laid here. They will be built of red brick, and will contain a school-room, 45 ft. 6 in. by 17 ft.; a class-room, 16 ft. by 12 ft.; and various other offices. The roof will be open, high-pitched, and stained and varnished. The plans and specifications were furnished by Mr. A. Andrews, of Bury, builder, who has engaged to build the school. Sir George Seymour, bart., gave the land for the site, and the total cost will be about 500*l.*, the larger portion of which will be raised by subscription.

Fladbury.—The old school, it seems, was greatly deficient in accommodation, dilapidated, and otherwise inconvenient, in consequence of which a subscription was set on foot; but as the estimated cost was nearly 900*l.*, the whole amount has not yet been raised, although the school has been built and opened. The architect was Mr. F. Preedy, of London, and formerly of Worcester; builder, Mr. Griffiths, of Eldersfield; and the site is near the church. The school, which has a residence for the master and mistress attached to it, consists of one large apartment, 51 ft. 6 in. by 19 ft., and will accommodate 112 children. The building is of brick, with tiled roof, steeply pitched, open wood-work internally, and small bell turret. At the north end is a window of five lights, with stone mullions, and a quatrefoil opening above; and in the west side-wall are two similar but smaller windows, with a fire-place under each, the two flues meeting in the wall between the windows. The facings and masonry of the windows are of freestone, and in the walls externally are bands of blue brick along the centre and at the base. A porch, with open roof, completes the building. There is a large inclosed play-ground.

Wincle.—The foundation stone of a new school and school-house, in connexion with Wincle church, has been laid, according to the *Macclesfield Courier*. The new school will be built on the site of the old one, on ground adjoining the churchyard, given for the purpose by Mrs. T. R. Daintry. Mr. Sugden, of Leek, is the architect, and the building contract has been let to Mr. J. Naden, of Leek, who will use for the work stone obtained in the neighbourhood from Bennett's Hill Quarry.

Liverpool.—The foundation-stone of the Fairfield National Schools has been laid on a site of land presented by Mr. T. S. Gladstone, on the Old Swan-road. The buildings, when completed, will comprise boys', girls', and infants' schools, with class-rooms, and a residence for the master; and they will afford accommodation for about 500 scholars. The plain Early English style of architecture has been followed in the designs, which were prepared by Mr. T. J. Kilpin, architect.

Sheffield.—The foundation stone of the schools which the Wesleyans are about to erect in Ellesmere-road has been laid. The site is on the right of Ellesmere-road, which has been laid out

below the old Grimesthorpe-road. The district contains a large and rapidly-increasing population. The schools will be a part of a larger scheme, which includes a chapel; and the total cost would be about 6,000*l.*, of which one-third will be devoted to the erection of the schools. The character of the architecture is Gothic, and the building will be two-storied, with school-rooms for children of both sexes, and a number of class-rooms. The designs have been prepared by Messrs. Wilson & Crossland, architects.

Kenton (*Newcastle-upon-Tyne*).—A new Free Methodist Chapel has been opened at Kenton. The chapel has been erected from designs furnished by Mr. George Snaith, of Newcastle, and under whose superintendence it has been carried out. The style of the building is Gothic, and it has been designed to hold 200 persons, all on the ground floor, with vestry and other conveniences behind. The pews are open, with ornamental bench ends. The whole of the internal fittings are stained and varnished. The cost of the building (exclusive of the site) will be about 300*l.* Mr. E. Brewis, Low Friar-street, Newcastle, was the principal contractor, Messrs. Bellwood & Son, Russell, Montgomery, Dawber, and Richardson being the sub-contractors for the mason work, plumbing, plastering, slating, and painting respectively. The stained glass spandrels in the two lancet windows in the west end of the chapel were presented to the trustees by Mr. G. Cooper, Clayton-street, Newcastle.

RECENT PATENTS CONNECTED WITH BUILDING.*

PREVENTING DAMP, INSECTS, AND VERMIN, FROM ENTERING DWELLING-HOUSES, &c.—*F. Feichtinger.* Dated 22nd August, 1864.—In erecting a house or building according to this invention, a sheet of glass, either plate or other glass of any suitable size, is fixed by cement or mortar against the interior of the walls, running the entire length of the building; in fact, every apartment has a glass wall, which can be ornamented or papered as may be required. In the case of a house already built, the glass is bent and inserted at the top of the room, meeting the glass which is inserted from the room above, and overlapping each other. By this means there is no possible entry or escapement either into the apartment or from the apartment.

KILNS FOR BURNING QUARRIES, TILES, BRICKS, &c.—*T. Bennett.* Dated 29th September, 1864.—For the purposes of this invention the exterior of a kiln is built of a similar form to that heretofore very commonly used of an oblong rectangular form. Fire-places are constructed on either side in such manner as to be below the bottom of the kiln. Each fire-place is arched or covered over, openings being, however, left for the heat and products of combustion to rise up through the roof of each of the fire-places into narrow spaces between pairs of walls, by which the interior of the kiln is divided into separate longitudinal compartments. It is, however, preferred that a kiln should be thus divided longitudinally into five compartments, but this number may be varied. The fronts of the fire-places are capable of being closed, and have each a door at the upper part. The interior of the kiln is lined with a wall leaving a narrow space between the interior of the outer wall and the lining wall, and into this space the products of combustion of each of the fire-places pass by means of an opening through the arch or cover of each of the fire-places. At the inner ends of the fire-places there is a hollow longitudinal space which is divided longitudinally, and there are openings into this space at the inner end of each fire-place, so that the heat may get freely under this part of the bottom of the kiln, and, consequently, below the bottom of the central compartment, by which the lower part of such central compartment is heated. Near the upper parts of the pairs of walls, and between them, there are horizontal tiles across the open space, and a little below these there are inclined bricks, or tiles fixed across the narrow spaces, by which the products of combustion may fairly rise up, while dust will be prevented descending between the spaces on either side of each fire-place, but will, by the inclined tiles or bricks, be caused to descend to the openings into the fire-places. The quarries, tiles, or other articles, are piled within the longitudinal chambers, and when they are full they are covered over with tiles and then with sand, in such manner as to prevent the flame, dust, and smoke entering the chambers. Over this covering, and over the pairs of walls and spaces between them, bricks or other articles are piled, which, from their nature, do not require to be burned in closed chambers. By thus arranging the fire-places at right angles to the pairs of walls which divide the kiln longitudinally, and by forming the ends of fire-places with openings into the spaces under the central part of the bottom of the kiln, the heat and products of combustion rising from the several fire-places become very uniformly diffused, and all the chambers are very equally heated.

CAISSONS.—*G. Furness and L. G. Moore.* Dated 31st August, 1864.—For the purposes of this invention it is preferred to employ caissons of an elliptical horizontal section, but other forms may be resorted to when carrying out the invention. Each caisson is constructed as heretofore of a series of short lengths or rings, which are connected horizontally by flanges and screw-bolts and nuts as heretofore; but in addition to the horizontal joints, each short length or ring is formed of two halves or parts, which, by upright flanges, are fastened by screw-bolts and nuts, so that while a caisson consists of a series of short lengths or rings connected horizontally together, as heretofore, the two parts or halves of each short length or ring are connected vertically, so that when a series of caissons have been sunk to a given depth, and parts of the foundation have been formed therein to the height where the caissons are to form permanent parts of the work, the inner halves or parts of the caissons which are above the permanent structure may be removed, while the outer halves or parts are allowed to remain in order to present an arched coffer-dam to prevent the water from getting to the interior while the work is being carried up, more or less resting on the foundation, or parts of the foundation, formed by and in the lower and permanent parts of the caisson.

CONSTRUCTION OF CHIMNEYS AND FLUES FOR HOUSES, ETC.—*W. H. Kelsea.* Dated 14th October, 1864.—The patentee claims, first, the construction of chimney breasts in houses and other buildings with a single flue for one series of fire-places throughout the several floors, as described. Secondly, the adaptation and application to a chimney or flue of a register capable of being adjusted, in the manner described, by means of a rack or by other suitable means, for the purpose of putting the fire-place on each floor into communication with the common flue, as required; and also, for regulating the draught from the fire-place into the flue. And, lastly, the adaptation and application of a movable soot-door to the bottom of the chimney, as described.

* Selected from the *Engineer's* lists.

Books Received.

The British Workman for July 1st has a powerful portrait of Abraham Lincoln, and a memoir of that very able and true-hearted man; besides an excellent engraving of a rural scene, after Birket Foster; and all for a penny!—"Sketches of the Sanitary and Social Condition of Greenock, by Walter Gunn, Missionary." Greenock: Black. Mr. Gunn is a missionary of the right sort: he is not only a religious and moral missionary, but a sanitary and social one. He not only recommends tracts and Bibles, but mops and lime-white pails and brushes; and his teachings not only tend to the promotion of religion and morality, but of sanitary truths, such as the evils of overcrowding and close apartments, and the healthfulness of fresh air and cleanliness. And a fine field he has at Greenock, one of the nastiest and most unhealthy towns in Scotland, where fever has of late been probably far more prevalent and deadly than anywhere else in the north. Mr. Gunn's pamphlet is a sensible production, useful to those he visits, and to others, as a sanitary and social tract, and interesting to all concerned in such subjects.—"The Railways' Construction Facilities Act, 1864; with Notes and Abstract of Nineteen general Statutes incorporated therewith; and the Act for giving additional powers to existing Railway Companies. By C. Wordsworth, Q.C., and Counsel to the Institution of Civil Engineers." Mr. Wordsworth's reliability in editing a volume like this is too well known to need any certificate from us. The Railways' Facilities Act, 1864, is a very important statute, which virtually takes the place of a special Act of Parliament, where all parties concerned consent to the requisite procedure in carrying out new railway works, and obtain a licence or certificate from the Board of Trade.

Miscellanea.

THE STATUE OF THE LATE SIR CHARLES BARRY.—The statue of Sir Charles Barry, in the Inner Hall of the New Palace of Westminster, will be uncovered on (this) Saturday, July 1, at twelve o'clock noon.

INAUGURATION OF THE ALBERT MEMORIAL, ABINGDON.—The memorial of the late Prince Consort, designed by Mr. Gibbs, of Oxford, and erected on an elevated situation in the recreation-ground, henceforth to be known as the Albert Park, Abingdon, has been inaugurated by the Earl of Abingdon. We have already given a description of this memorial, with an engraved view of it, in the *Builder*.

MONUMENTAL.—A marble statue, by Noble, of the late Mr. J. F. Foster, chairman of the Salford Hundred Sessions, has been presented to the magistrates of the Manchester division of the Salford Hundred, by Mr. J. F. Bateman, civil engineer, and placed in the hall of the Assize Courts. The statue represents the learned gentleman in his wig and robes, and is placed at the east end of the hall.——The monument at Logierait, to the late Duke of Athole, is to take the form of a Celtic cross, and with the pediment, will reach to a height of 59 ft.

BELGRAVE MANSIONS.—A limited company is being formed for the erection of "*maisons meublées*" at Grosvenor-gardens, Grosvenor-place. Messrs. Trollope & Sons having become the lessees from the Marquis of Westminster of a large portion of the land comprised in the "Pimlico Improvements," the opportunity has been taken for the erection of an establishment of this kind, without the enormous cost involved in clearing ground for the purpose. The site lies between the bottom of Grosvenor-place and Victoria Station. It will be in future known as Grosvenor-gardens. The elevation of the proposed buildings, as well as of all the adjoining buildings, has been designed by Mr. T. Cundy, jun., the architect of the Marquis of Westminster, who has also laid out the garden inclosures in front of the houses. The ground-floor and basement of the building, as in Paris, will be let off in shops, and a portion of the ground-floor will be let for a *restaurant*, the proprietor being bound to supply the residents in the apartments. The upper part of the building will be the "*maisons meublées*," and will comprise about 200 rooms. These will be so arranged that any number may be let off as a separate "apartment;" and as there will be several entrances direct from the street, a tenant taking any considerable number of rooms might have the sole use of one of such entrances, thereby securing entire privacy. Messrs. Trollope have entered into a contract with the company, for a sum not exceeding 105,000*l.*, to deliver up the building furnished complete on 25th March, 1867.

THE METROPOLITAN FREE DRINKING-FOUNTAINS ASSOCIATION.—The annual meeting of this body has been held in Willis's Rooms, but was very thinly attended. Mr. Samuel Gurney, M.P., occupied the chair. The report stated that several drinking-fountains and troughs for dogs had been erected by the society since last report, but the great value of space in the metropolis had rendered them unable to provide larger troughs for cattle except in a few places. Between thirty and forty fountains had been given by private individuals. In addition to eighteen new fountains and one cattle-trough erected by the Association, and the seven private fountains given during the past fifteen months, arrangements were made for three other fountains. The cost of one to be placed near the Houses of Parliament would be defrayed by Mr. Charles Buxton, M.P.; and amongst the donors' names were those of Earl Russell, the late Cardinal Wiseman, and the Rev. Newman Hall. The amount guaranteed was far less than was required to carry on the work; and unless increased aid were given, there was danger of the benefits of the Association being stopped. Six years ago there were no fountains in London. The Society had since erected ninety-one. Many of those given by private individuals, and which were under parochial control, had fallen out of repair, and unfortunately the discredit of the circumstance was erroneously given to the society, whose desire it was to have those fountains within their management. The income required was, however, 1,000*l.* a year, and all the annual subscriptions did not at present amount to half that sum.

METROPOLITAN RAILWAYS.—The *Railway News* considers it a moderate estimate to put the various railway works now in hand, or shortly to be commenced, in and around London, at an aggregate length of 120 miles, and involving an outlay of 30,000,000*l*.

ANOTHER NEW LIGHT.—The *Opinione*, of Turin, states that Professor Prospero Carlevaris, of Mondovi, has just discovered a new luminous substance, which is applicable both to photography and to the requirements of social life. This substance costs little or nothing. When brought into contact with a gas-light, it increases its intensity to an amazing degree, without dazzling the eye, like the electric light, or being intermittent, like that produced by magnesium.

MESSRS. BRASSEY'S RAILWAY OVER MONT CENIS.—Capt. Tyler has recently reported to the Board of Trade on this line, to which we have before now drawn our readers' attention. Capt. Tyler states,—"I have to report as the results of my observations and experiments, that this scheme for crossing the Mont Cenis is in my opinion practicable both mechanically and commercially; and that the passage of the mountain may thus be effected not only with greater speed, certainty, and convenience, but also with greater safety than under the present arrangements."

NATIONAL PORTRAIT EXHIBITION FOR 1866.—The Committee of Council on Education have received a letter from the Earl of Derby suggesting the formation of a national portrait exhibition. Their lordships say that they consider Lord Derby's suggestions very valuable, and will carry into effect, in 1866, a National Portrait Exhibition generally in accordance with them. They have requested the trustees of the National Portrait Gallery to act with other noblemen and gentlemen as a committee of advice. Mr. Samuel Redgrave has been requested to undertake the special charge of carrying this minute into effect.

COLLECTION OF ENGRAVINGS IN LIVERPOOL.—Mr. Percy M. Dove lately exhibited an extensive collection of engravings, being specimens of the works of the chief masters of the art in the Low Countries, and now he has placed at the disposal of the committee of the Free Public Library a selection from his collection of the French School. This large assemblage numbers some hundred and sixty specimens, and is merely confined to works of those artists who flourished during the time of Louis XIV. Mr. Dove's collection is arranged according to date, commencing with Philip Thomassin, born in 1536, and terminating with Bervie, who flourished about 1760.

PALESTINE EXPLORATION FUND.—A public meeting of those interested in this undertaking has been held in Willis's Rooms, St. James's; the Archbishop of York in the chair. There was a tolerably full attendance, and amongst the company were the Bishop of London, Lord Stratford de Redcliffe, Count Melchior de Vogüé, Mr. Layard, M.P., Mr. Samuel Gurney, M.P., Professor Owen, Sir Roderick Murchison, Mr. W. Gifford Palgrave, Mr. G. Gilbert Scott, &c. It was resolved to form a fund for the purpose of promoting the exploration of the Holy Land, and appoint a committee, with power to add to their number; also, that the exploration of Jerusalem, and many other places in the Holy Land, by means of excavations, will probably throw much light upon the archæology of the Jewish people. Other appropriate resolutions were also passed.

IRONWORK IN FRANCE.—*Ryland's Circular* says,—An iron lighthouse of the largest size is being constructed in Paris for the Government of the Argentine Republic. It is to be placed at the confluence of the Uruguay and the Parana, where the junction forms the Rio de la Plata. Again, as regards wrought iron, we read that a grand bridge, thrown over the Po at Piacenza, was opened to the public on the 3rd ult. The length of the bridge is full 557 yards. The seven pillars which support the bridge are entirely of iron. There is a single roadway over the bridge, and side-flagging for foot-passengers. The construction of the pillars required 3,000,000 bricks, 1,400 cubic yards of granite, and 500 tons of iron. There were 2,400 tons of iron used in the construction of the bridge itself. This enormous mass of metal is of English origin, but was wrought in the ironworks of Lille. Half of the expense is said to have been defrayed by the Lombard Railway Company, and the remainder by the Italian Government.

ROYAL MASONIC INSTITUTION FOR BOYS.—The new building in Lordship-lane, Wood Green, is to be inaugurated on Saturday next, the 8th, the Earl of Zetland presiding.

TENDERS

For alterations and additions to the Sussex Hotel, Landport. Messrs. Rake & Ranwell, architects. Quantities supplied:—

Dillon	£895 10 0
Light (Brothers)	787 0 0
Lawrence	760 0 0
Duffett	695 0 0

For St. John's Church, Hollington, Sussex. Mr. E. A. Wyon, architect:—

Myers	£5,360 0 0
Dove, Brothers	3,995 0 0
Howell	3,944 0 0
Hughes	3,022 0 0

For the enlargement of the old parish church, Merton:—

Crouch	£1,153 7 0
Dobie	1,097 0 0
Bachelor	1,087 0 0
Cushing	1,060 0 0
Jarrett	1,048 0 0
Norris	999 13 3
Dover	860 0 0

For Tennis Court, Cambridge. Mr. W. M. Fawcett, M.A., architect. Quantities supplied by Mr. G. W. Mantell:—

Thoday & Clayton	£3,033 0 0
Gray & Son	2,973 0 0
Bell & Son (accepted)	2,887 0 0

For the erection and completion of gas-works, cottage, mains, &c., for the Milborne Port Gas Company (Limited):—

Holmes & Co.	£1,600 0 0
Vickary	1,339 12 6
Porter & Co.	1,327 14 0
Laidlaw & Son (accepted)	1,297 0 0
Brown, Brothers	1,289 0 0

For rebuilding 6, Swithin's-lane, E.C., for Mr. Charles Hendrey. Mr. Samuel Field, architect. Quantities supplied:—

Gammon	£1,763 0 0
Rider	1,730 0 0
I'Anson	1,694 0 0
Jackson & Shaw	1,640 0 0
Higgs	1,623 0 0
Nixon (accepted)	1,597 0 0

For erecting a billiard-room, and sundry alterations to the Albion Tavern, Stoke Newington, for Mr. G. Rolls. Mr. F. G. Widdows, architect:—

Sargeant	£1,390 0 0
Hallworth	1,317 0 0
Tully	1,270 0 0
Barlow	1,177 0 0
Flint	1,145 0 0

For alterations to Rock Villa, Greville-road, Kilburn, for Mr. Mavor. Mr. F. G. Widdows, architect:—

Green & Son ((accepted)	£1,084

For Baptist Chapel, schools, boundary wall, and entrance gates, at Hemyock, Devon. Mr. T. W. James, architect:—

Cole	£1,850 0 0
Tiler	1,700 0 0
Hart	1,550 0 0

For a house, garden walls, &c., at Shortwood, Luppett, North Devon, for Mr. W. H. Tucker. Mr. T. W. James, architect:—

Thomas & Wills (accepted)	£2,990 0 0

For the erection of two labourers' cottages at Luppitt, North Devon, for Mr. Mark Moore. Mr. T. W. James, architect:—

Manley (accepted)	£310 0 0

For a new church, Victoria-road, Leicester. Mr. J. Tarring, architect:—

	General estimate.	Separate estimate. Boundary walls, Railing, &c.
Richards	7,362 0 0	333 0 0
Myers & Sons	6,619 0 0	320 0 0
Jones & Sons	6,020 0 0	330 0 0
Bland	5,600 0 0	290 0 0
Porter	5,595 0 0	285 0 0
Hutchinson & Son	5,585 0 0	287 0 0
Neale (accepted)	5,540 0 0	250 0 0

For two pairs of semi-detached residences, South Beach, Great Yarmouth, for Messrs. Burton & Hudspeth. Mr. J. T. Bottle, architect:—

Balls	£3,450 0 0
Browne & Bailey	3,240 0 0
Leggett	3,169 10 0
Norfor	3,158 0 0
Howes & Others (accepted)	2,965 0 0

For building two shops, &c., in Silver-street, Hull, for Mr. John Easten. Mr. R. G. Smith, architect:—

Clarkson	£2,173 0 0
Siminson & Frow	2,120 0 0
W. & S. Hall	2,041 0 0
Barrett	2,025 0 0
Musgrave	1,989 0 0

For Parsonage House at Whitton, near Hounslow. Mr. E. B. Lamb, architect:—

	Kentish rag facing.	White brick.
Pearman	1,850 0 0	—
Jacklin	1,822 0 0	£1,582 11 0
Gammon	1,713 0 0	—
Hiscock	1,637 15 0	1,448 10 0
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